

TECHNOLOGY DEPT.

PURCHASING

OCTOBER, 1951

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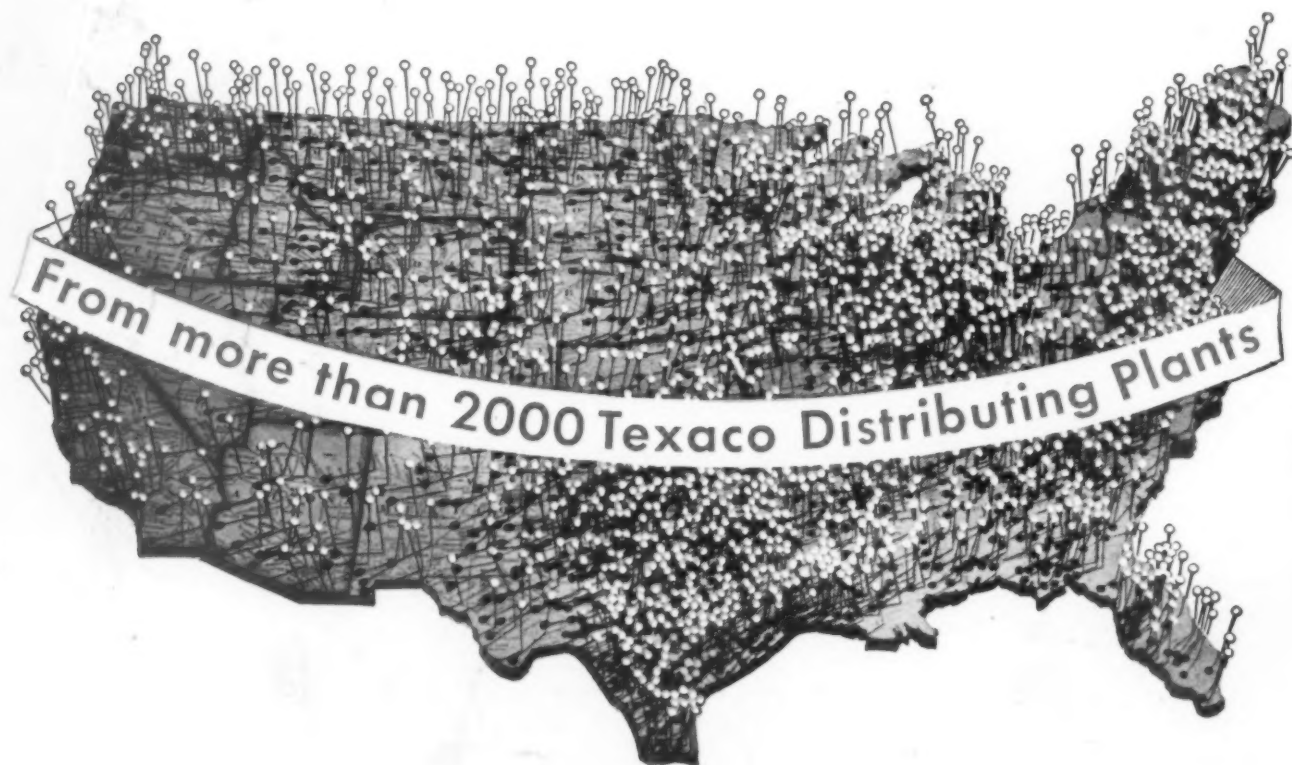
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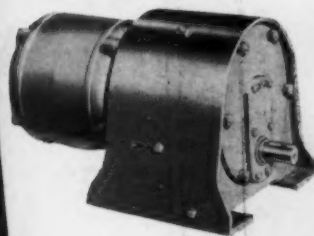


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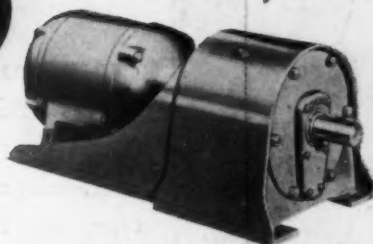
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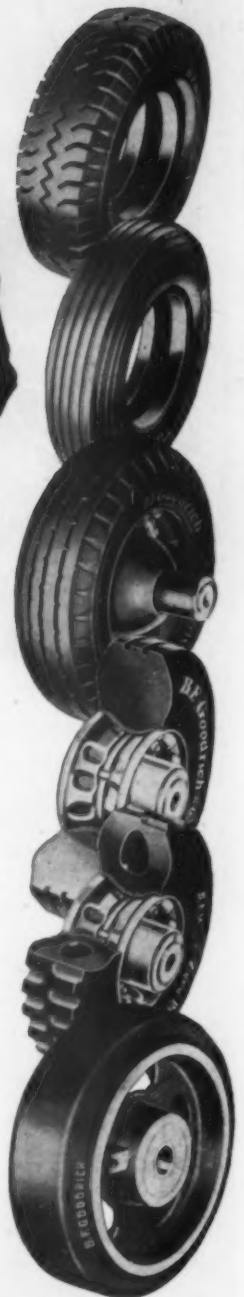
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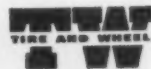


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VOL. 31, No. 4

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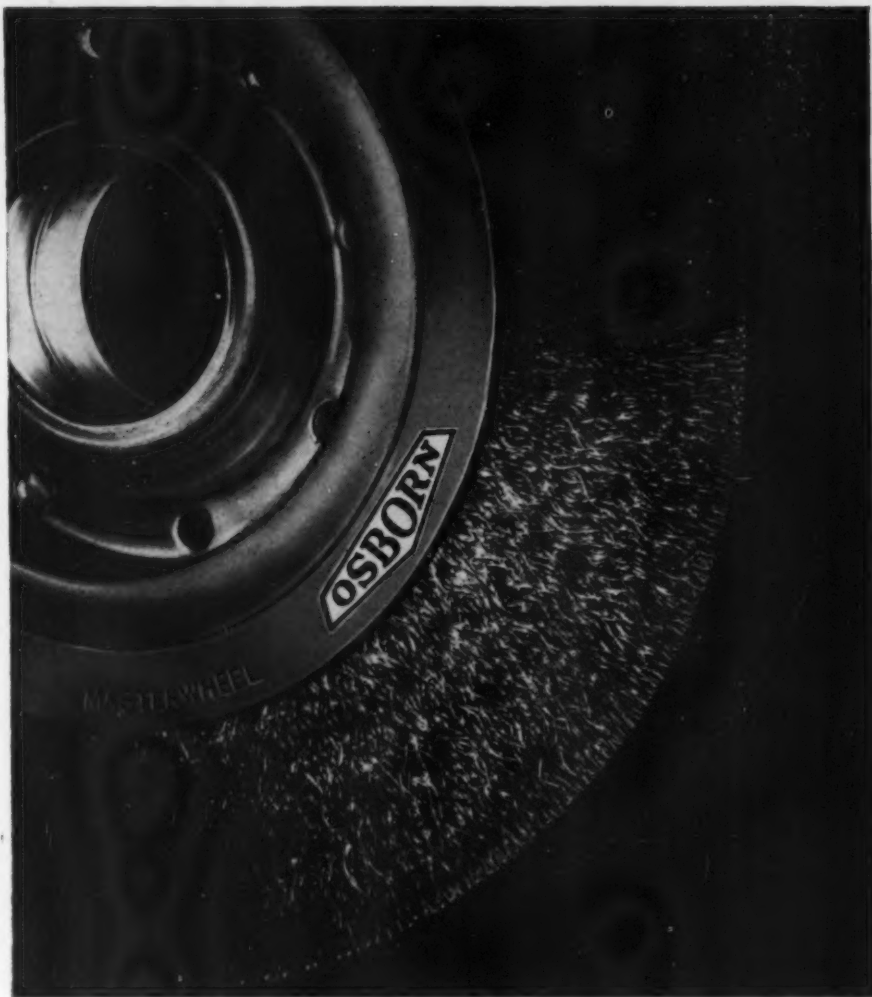
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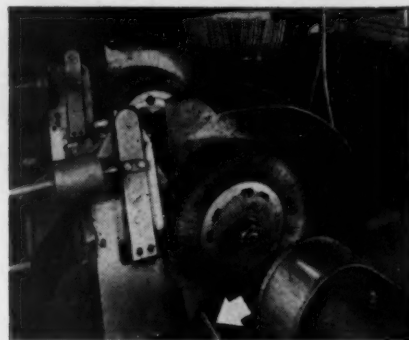
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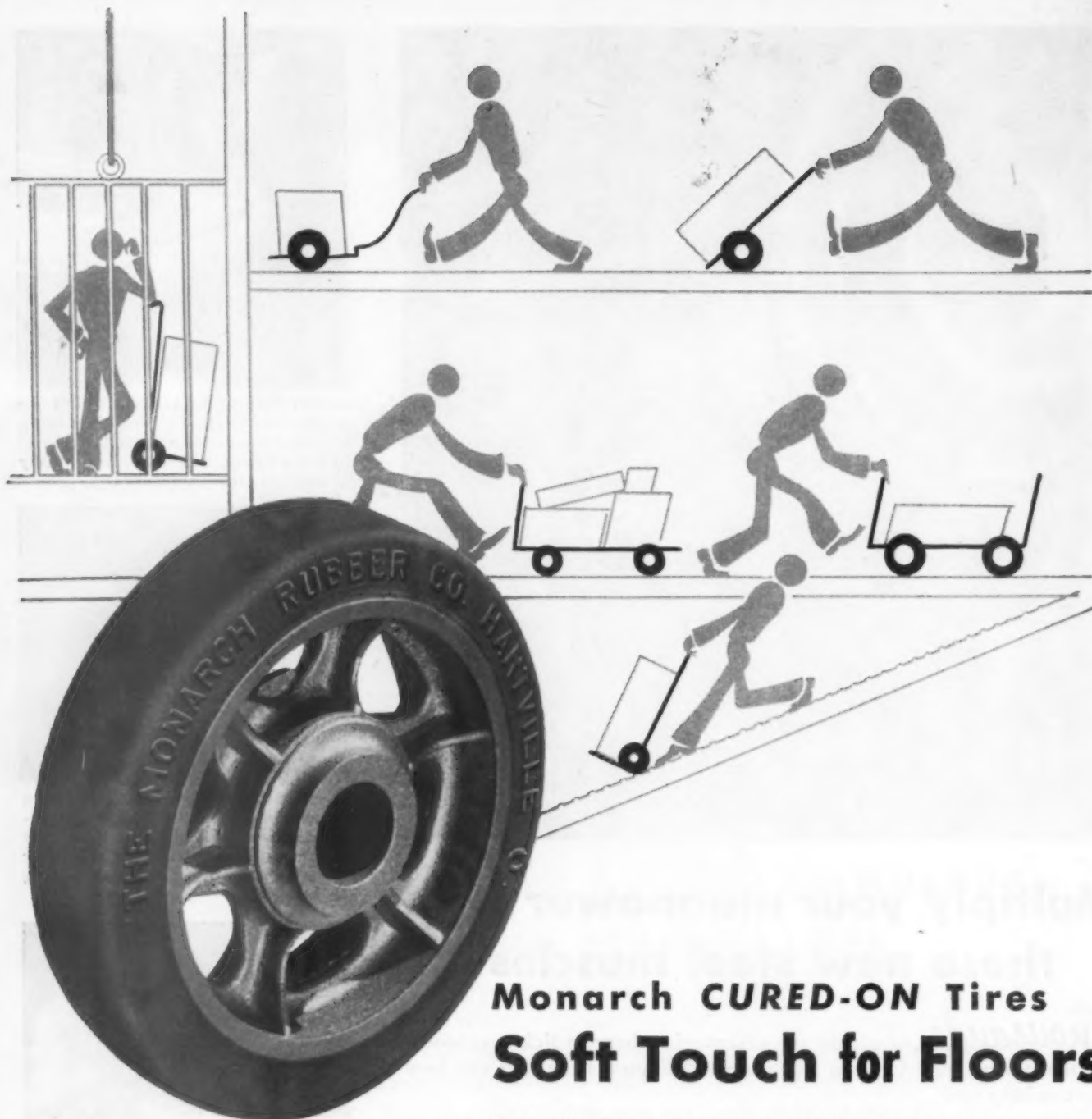


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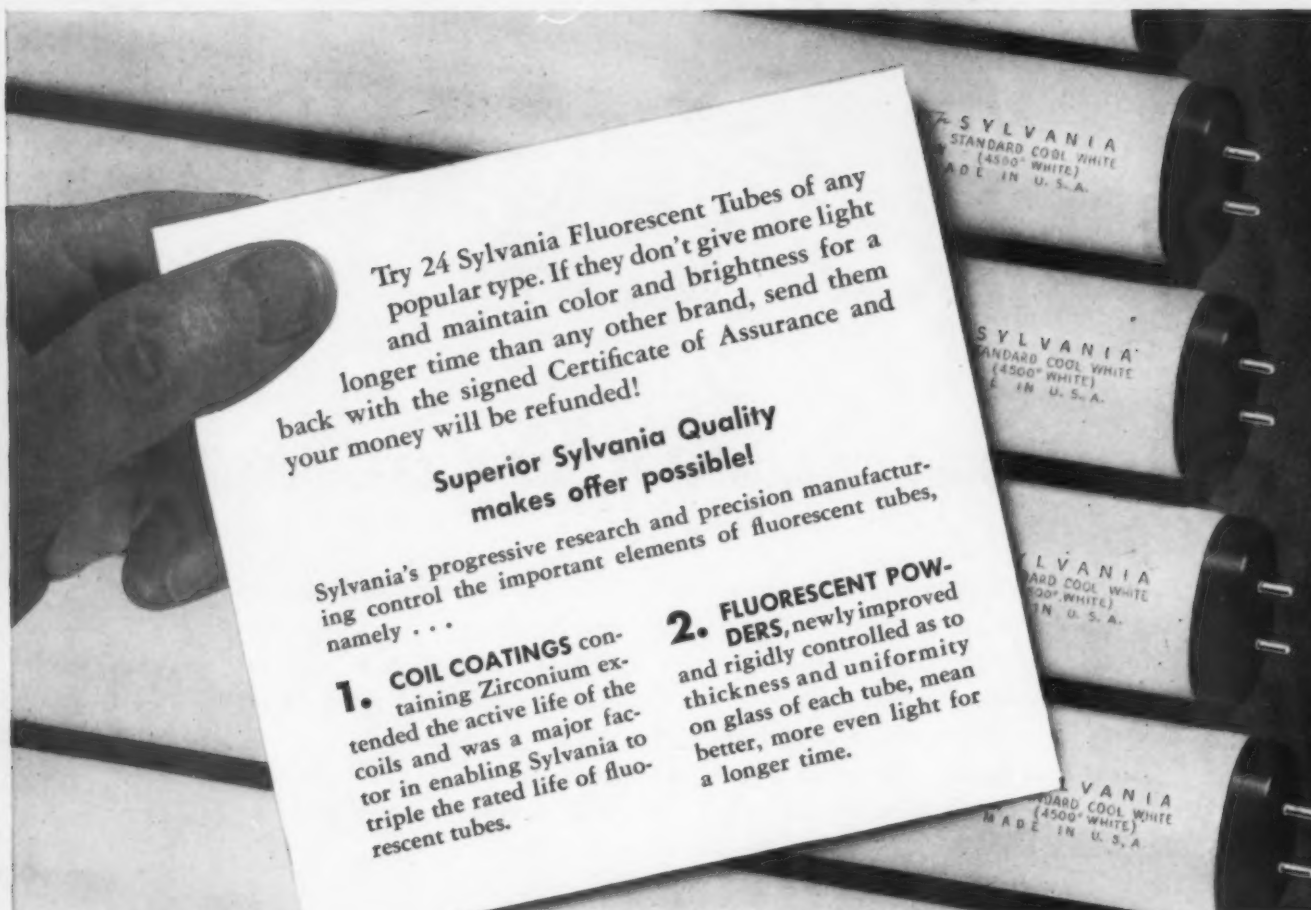
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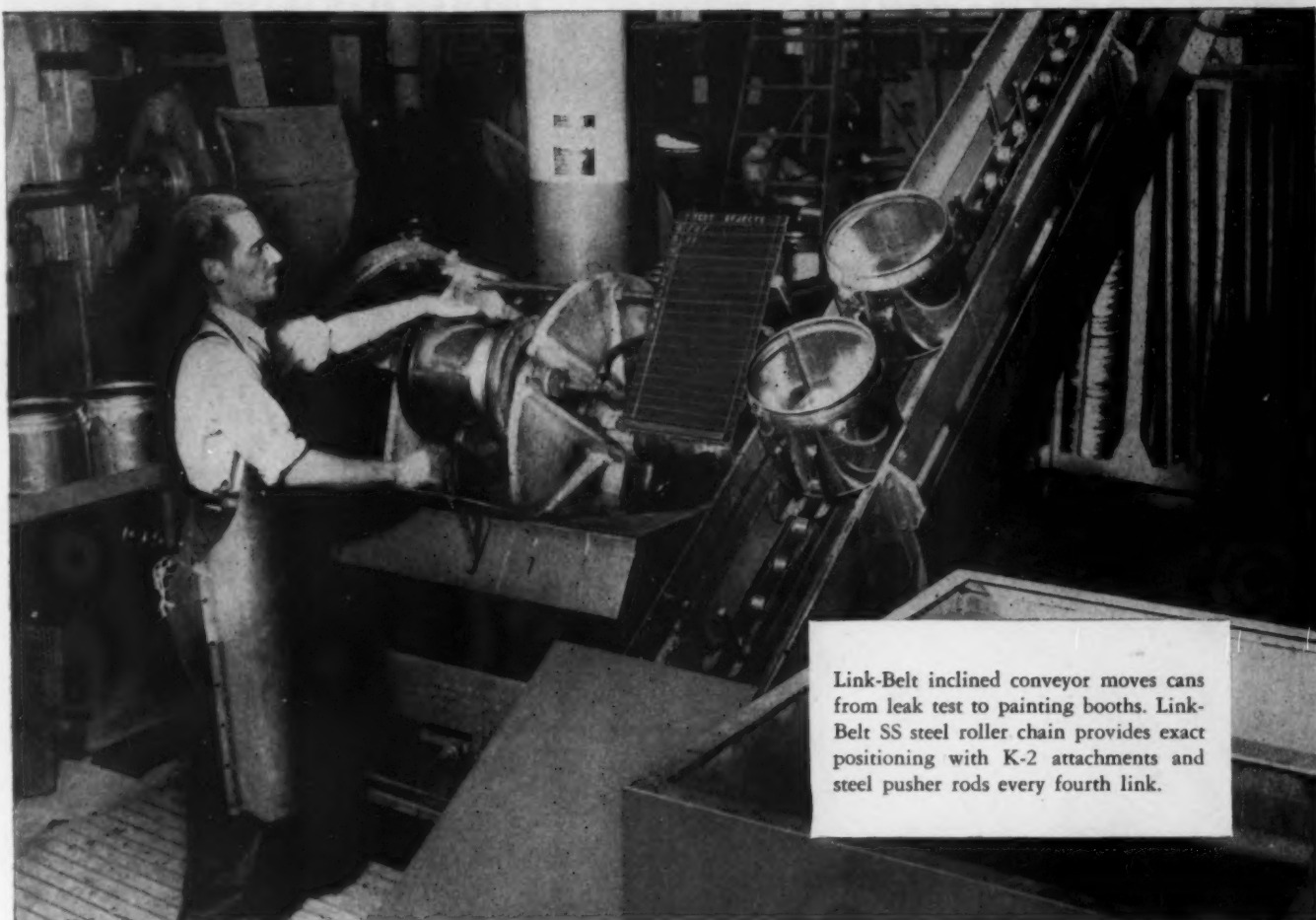


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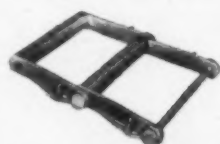
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PURCHASING PREVIEWS

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October 1, 1951.

INDUSTRY FEELING GREATER IMPACT OF CONTROLS

Materials control action is increasingly affecting industry. Impact of controls was delayed because of large inventory of both materials and finished goods in the hands of processors and distributors.

Government control administrators report that manufacturers are becoming more and more dependent on their current supply of materials. Trade sources report that consumer buying is beginning to whittle down the accumulation of finished goods.

While consumer buying assumed greatest proportions during the first half of this year in anticipation of shortages, the pace of buying slowed down materially during the recent months when production cutbacks began to take hold.

Resumption of large volume buying this fall and winter will disclose the extent of the cutbacks in civilian production.

ALUMINUM SUPPLY TO IMPROVE

Trouble spots in the supply picture continue to be the shortages of structural steel and aluminum, and especially of copper.

Aluminum outlook will be improved with anticipated operation in December of Kaiser's new plant at Chalmette, Louisiana. Production at Kaiser's Mead plant, Reynolds' new Corpus Christi plant, and additional pots at Reynolds' Longview plant will add substantially to the aluminum supply shortly after January 1.

MATERIALS SHORTAGES HAMPER PRODUCTION

Industries reporting difficulties include the following: Machine tool builders report that their production is hampered through inability to procure sufficient supply of hot and cold rolled steel bar.

Freight car builders report difficulties in obtaining car wheels and axles, and anticipate supply of rolled steel will be extremely tight in the fourth quarter.

Complaint has been made to the National Production Authority that the power equipment industry has been unable to procure proper alloys for the fabrication of turbines which operate at high temperatures.

Supply of alloying materials has been a general problem in industry.

Precision gear industry reports shortage of steel for forgings. Shortage of bronze has affected output of worm gears. Inadequate supply of copper and stainless steel wire will result in serious shortage of fourdrinier and industrial wire cloth.

SHORTAGES IN WOOD PULP AND CHEMICALS

Outlook in containers and packaging materials reflects the general shortage conditions. Reduction in availability of wood pulp will cut down production of folding boxes, special food cartons, paper pails, paper cups and nested food containers. Large food crops will create need for greater supply of paper

containers, especially with supply of metal containers and closures cut back through orders issued by NPA.

Setup box industry indicates that there has been a general easing of their supply problems, with waste paper available, and adhesives, cover papers and tapes easily obtainable. Similarly in good supply are burlap and cotton bags, both new and used.

Government analysts report that the shortage of sulfur continues to concern manufacturers of synthetic detergents, and is also a problem to the alcohol and solvents industry. Chlorine is in short supply, and may become even more so.

Phenol and styrene continue in short supply. Balance in supply and demand for glycerin is anticipated for remainder of this year.

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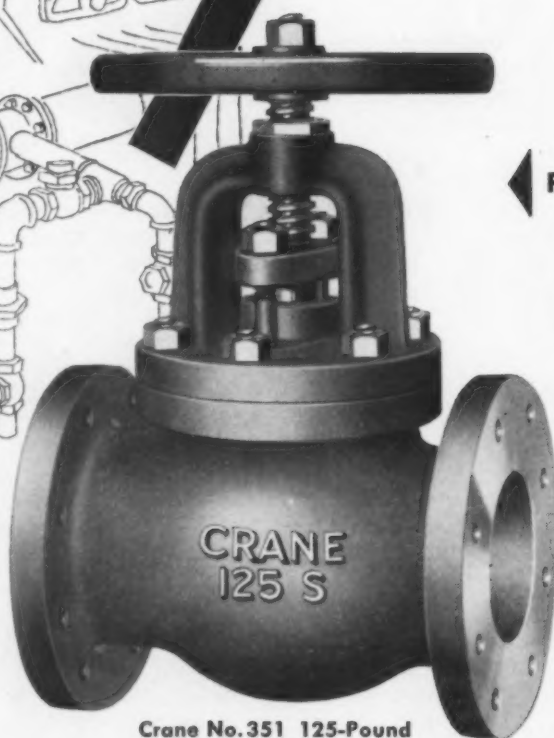
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DIRECTIVES ASSURE MILITARY PREFERENCE

Shortages of materials have not retarded production of military supplies. Government actions have been aimed at giving the military first cut of all available materials.

Initial Government action in materials control was in the form of directives to producers to set aside a percentage of production for military orders. While under the Controlled Materials Plan all industry has an equal degree of priority on materials, this is only the case when the military and atomic energy programs have all the materials they need.

Where shortages may impede military output, directive and special scheduling techniques will assure priority to this type of production.

As an example, an ammunition scheduling unit including representatives of the armed services, the Munitions Board, and the Brass Mill Branch of the NPA Copper Division has been set up to schedule ammunition brass at the brass mill level.

BATTLESCRAP COMING IN FROM KOREA

Collection of scrap has become an important factor in extending the supply of materials. Six hundred and thirty regional scrap committees have been organized throughout the country to stimulate the collection of scrap.

It is estimated that 36,000,000 tons of iron and steel scrap will be needed this year, and roughly 38,000,000 tons in 1952.

Battlescrap from Korea is being channeled back to industry. The Korean government recently sold 100,000 tons of its scrap to American scrap dealers for shipment to Japan.

It is reported that a portion of this scrap will be converted into finished or semi-finished steel in Japan for export to the United States. Such steel is likely to come on the U. S. market at advanced prices.

U. S. steel industry would prefer a direct flow of battlescrap from Korea to U. S. mills.

Consideration is being given for Government agency to purchase battlescrap and return it to the United States.

NUMBER OF INDUSTRY ADVISORY COM- MITTEES GROWING

Both Office of Price Stabilization and National Production Authority have been increasing the number of industry advisory committees. NPA committees number well over 400, and this number is being increased as additional industries are affected by being covered under the Controlled Materials Plan.

Function of the advisory committees is to bring Government into direct contact with industry for advice as to the effect of shortages and impending regulations.

Industry committees are purely advisory. The size of the committees varies depending upon the size of the industry, with most committees ranging from a dozen members to as many as 24.

NPA TRYING AGAIN TO DEFINE "SMALL BUSINESS"

Recurrent problem of defining what is meant by the loosely applied term "small business" is under study by the National Production Authority.

During World War II, a rough rule-of-thumb was applied, and companies with less than 500 employees were considered small, with all others classified as large.

Thinking now is to analyze each industry to determine the units which can be classed as small.

Under this revised concept, steel plants, aircraft plants, small arms ammunition plants and aircraft engine plants can have up to 2,500 employees and still be classified as small.

In contrast, manufacturers of canvas products, millinery, ice plants, bookbinders and venetian blind manufacturers are classified as small plants when they employ less than 50 people.

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MAGNESIA PRODUCTS

Carey

The Philip Carey Mfg. Co., Lockland, Cincinnati 15, Ohio

In Canada: The Philip Carey Co., Ltd., 277 Duke St., Montreal 3, P.Q.

ASPHALT • ASBESTOS • MAGNESIA PRODUCTS

Rope leads from **UPSON-WALTON**



Selecting the "lay" of wire rope

● An important characteristic of a wire rope is its *lay*—the relative directions in which wires in the strands, and strands in the rope are twisted.

In *regular lay* rope, the wires in the strands are twisted in the opposite direction to the strands in the rope.

However *lang lay* rope—in which wires and strands are twisted in the same direction—offers several advantages:

- it flexes better
- it has more resistance to abrasion
- it has more resistance to bending fatigue

When choosing *lang lay*, be sure to specify that it be "preformed". An extra operation in the manufacture of Upson-Walton's LAYRITE preformed rope forms the wires and strands in a fixed spiral. This frees each part from internal stress. Years of rugged service have shown that Upson-Walton's LAYRITE wears longer, cuts maintenance costs.

Specify it on your next tough job.

THE UPSON-WALTON CO.
CLEVELAND, OHIO

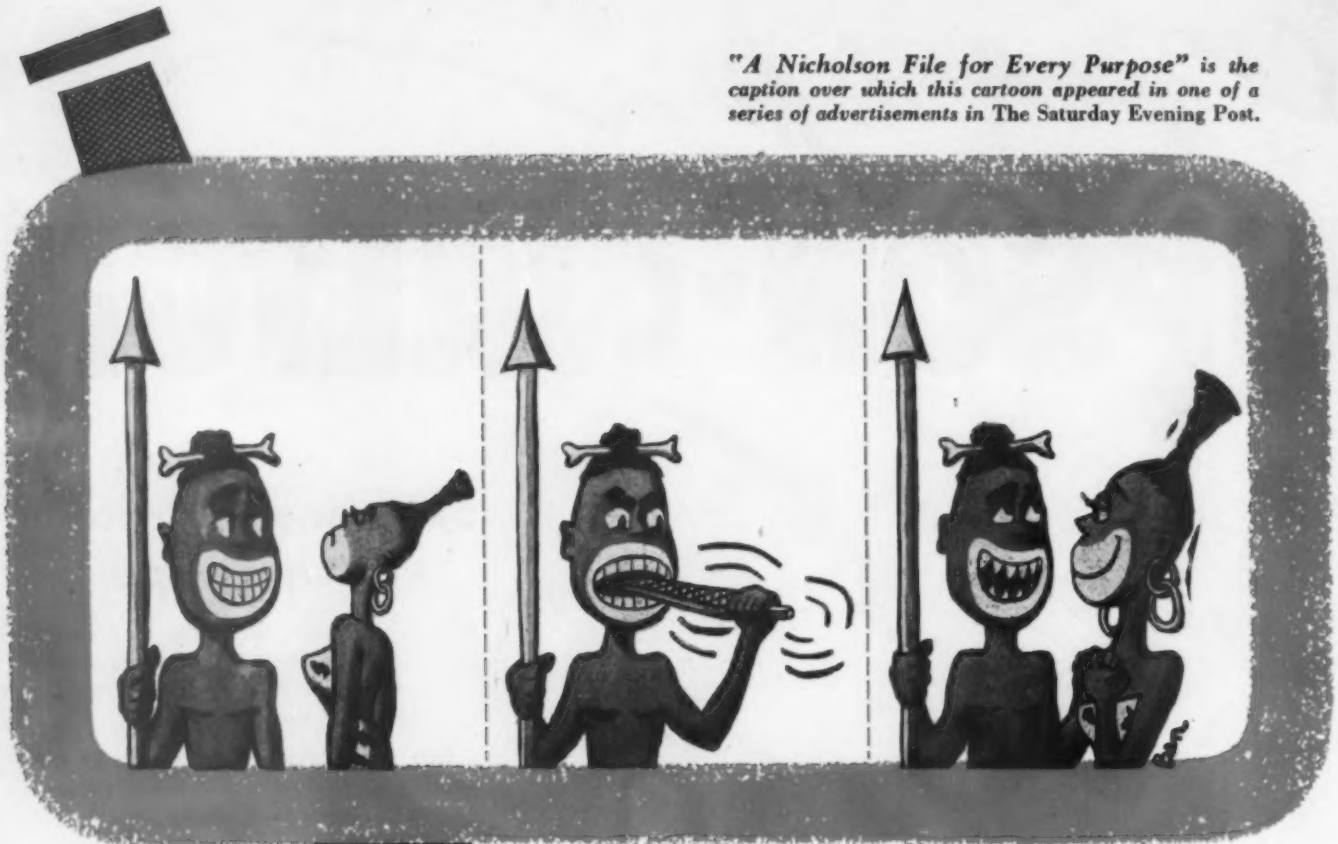
NEW YORK • CHICAGO • PITTSBURGH

Proof from The Griswold-Eshleman Co., Cleveland
Job No. C-4926 First Proof—SBH—2-15-51

**wire rope • rope fittings
• tackle blocks**

MATCH YOUR WIRE ROPE TO YOUR FITTINGS AND BLOCKS... ONLY UPSON WALTON OFFERS ALL THREE

"A Nicholson File for Every Purpose" is the caption over which this cartoon appeared in one of a series of advertisements in The Saturday Evening Post.



Enlarged "horizon" (cross section) of the teeth of a typical Nicholson file.

The right teeth make a big difference

Proper design, even height, uniform sharpness and correct hardening of teeth are tremendously important in lengthening the life and increasing the efficiency of files. Such qualities take on added significance as defense preparedness calls for production speed-ups, steel conservations and maximum tool wear. They are "naturals" in Nicholson products.

Nicholson file manufacture has *always* given uppermost thought to the designing, cutting and heat-treating of the myriads of tiny teeth which constitute the vital "business ends" of one of industry's most indispensable hand tools.

Thus, it can be said that Nicholson and Black Diamond files "speak through their teeth." And what they say is, "*Twelve perfect files in every dozen*—made from top-quality file steel and 87 years' experience."

Sold through industrial distributors throughout the world.

How to select, use and care for *The right file for the job* is interestingly described with words and pictures in Nicholson's famous 48-page book, "FILE PHILOSOPHY." FREE . . . send for as many copies as you can judiciously place in the hands of your key production and purchasing personnel.



NICHOLSON

A FILE FOR EVERY PURPOSE



NICHOLSON FILE CO. • 28 ACORN STREET • PROVIDENCE 1, RHODE ISLAND
(In Canada, Port Hope, Ont.)



Modernize

YOUR CATALOG AND BULLETIN FILES

Bring Your Source Information Up-to-date on New and Improved Equipment, Products and Materials. This is the first of — FIVE Pages Listing the Latest Trade Literature! Check All Five — 19, 20, 22, 24 and 178! A special listing of catalogs and bulletins on office equipment and supplies will be found on page 178. Additional information about New Products described on pages 128 to 174, use the coupon on page 128.

Mica Capacitors

1. NEW catalog (420-421) is termed a most complete encyclopedia on mica capacitors for commercial, industrial and military application. It is a valuable source of pertinent information for engineers, military service laboratories and industrial purchasing men. Manufacturer's type number and the corresponding JAN unit designation are shown in each listing, thus eliminating translation from CD to JAN and vice versa. All data such as characteristics, derating, dimensions, tolerances, extras or exceptions, etc. are shown on same page with particular type described. Convenient listing identifies by consecutive catalog numbers or alphabetical designation, the 92 capacitor types covered by the catalog. Cornell-Dublier Electric Corp.

Grinding Know-How for More Production

2. "KNOW-How" folder lists 16 booklets packed full of helpful information on the "know-how" of increased production with Norton abrasives and grinding wheels. It includes booklets on tool room grinding, handbook on abrasives, cut-off wheels, grinding carbide tools, internal grinding, rough grinding, disc grinding, setting-up metal polishing wheels and belts, and so on, plus catalog on grinding wheels, catalog on grinding and lapping machines. It also tells about series of motion pictures with sound and color entitled "Lessons in Grinding,"

and tells about the School of Grinding. You will want to make your own selection so ask for copy of Norton Company's "Know-How" folder.

430 Stainless Steels as Alternates of 18-8 Series

3. DEFENSE requirements absorb most of current production of nickel. Stainless steels which contain nickel are available only for high-priority applications. Booklet "A Guide to Type 430 Stainless Steels as Alternates of the 18-8 Series" contains information to aid in considering Enduro Type 430 Stainless Steel as an alternate for Type 302. It gives data on mechanical properties, corrosion resistance, heat resistance, drawing, forming and welding qualities, along with information on general applications, and comprehensive list of Laboratory Corrosion Data. Republic Steel Corp.

Copper Clad Metal Saves Up to 80% of Copper

4. NEW booklet describes "Electroshield, The New Copper Clad Metal." Manufacturer states it saves up to 80% of copper, and, secondly, it can be used for most applications where copper sheets are now employed. Aim of booklet is to furnish potential users with sufficient data to determine applicability of Copperclad to their needs. Copperclad combines the strength of steel with the ductility and corrosion resistance of copper. It was initially manufactured to provide improved shielding and housing of sensitive electronic equipment, including radar and radio. It is not only applied in the electrical industry, but also in the automotive, refrigeration, hardware, chemical and other industries where products are made of copper sheet. American Cladmetals Co.

(Continued on page 20)

READER SERVICE COUPON

OCTOBER, 1951

MAIL TO:
PURCHASING—Reader Service Dept.
205 East 42 Street
New York 17, New York

Circle the numbers of the trade literature items you want.

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23	24	25	26
27	28	29	30	31	32							

Name..... Title.....

Company.....

Street Address

City..... Zone..... State.....

(Continued from page 19)

Industrial Rubber Type For Office and Shipping Room

5. **BASE-LOCK** rubber types with special cast rubber base for flat, roll, rocker or peg mounts, which stays in place because it is locked into the base, for office and shipping room stamps, is described in Catalog Section D. Kind and size of type faces available are illustrated. One base takes all sizes of type from $\frac{1}{8}$ " up in the same set up. Type is self aligning and does not slip under printing pressure. Catalog also illustrates roller marker for shipping departments, warehouse use, etc., which may be had with Base-lock type base for changeable logotypes and characters; printing surface is $5\frac{1}{2}$ " x 2". Roller marker may be used for printing on paper, wood, cloth, wax paper, metal, etc. Pad and ink accessories, and marking brushes, pens and ink are described; also automatic case numberer with rubber figures up to 1" size. Wm. A. Force & Co. Inc.

Spiral Woven Wire Conveyor Belts

6. **SPIRAL** Woven Wire Conveyor, Belts and Complete Conveyor Systems. Catalog No. 31 contains 40 pages of illustrated standard and special types of wire belting weaves with specifications and descriptions. Power formulae and construction details are covered fully. This is a useful handbook on these systems. Korb-Pettit Wire Fabrics and Iron Works, Inc.

Coolant for Almost Any Machine Tool

7. **LUSOL**, an all-chemical cutting fluid, performs so amazingly well in almost any machine tool, that it is of tremendous importance to any plant that does any amount of machining. Booklet tells about the properties of the coolant, elimination of dermatitis and odor, elimination of cleaning and degreasing operations before painting, plating or assembly. It contains complete information on cleaning of machines, mixing and maintenance of coolant solutions plus case histories of the product in use in almost every type of metalworking operation. F. E. Anderson Oil Co.

LATEST TRADE LITERATURE

Check Over All Five Pages!

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Check Coupon on page 19

"Single Spindle Automatic of Tomorrow"

8. **DIALMATIC** is the name of single spindle automatic screw machine termed "the single spindle automatic of tomorrow", which is described in new illustrated bulletin. The Model AB Dialmatic includes electric feed control, Geneva turret index, increased spindle speed range, reduced idle motion time, hydraulic clutch shifters, hand crank stock feed adjustment, and other features. It is quickly and easily convertible from a bar machine to a chucking automatic by substituting a simple, low-cost chucking attachment for the bar feed assembly in the spindle. The Cleveland Automatic Machine Co.

Asbestos and Fibre Sheet Packing

9. Eight-page bulletin features complete line of R/M asbestos and fibre sheet packings, consisting of woven asbestos wire inserted, Pyroid, Navy grade "Dreadnaught", No. 670, K-63, No. 10,000 compressed asbestos sheet packings, and "Dur-oil" fibre sheet. The bulletin gives complete description and illustrations of each type of packing, together with full service recommendations, standard sheet sizes, and weights and thicknesses in which each type sheet is available. Packing Division, Raybestos-Manhattan, Inc.

Creped Cellulose Wadding for Military Packaging

10. "A GUIDE for Specification, Procurement and Use", booklet contains recommendations for specifying, procuring and use of creped cellulose wadding in military packaging. Bibliography of Cushioning Determination Studies enables users to determine cushion requirements closely through mathematical calculation. Federal Specification UU-C-843 "Cushioning Materials, Cel-

lulosic" supersedes Army-Navy Aeronautical Specification Mil-W-6163 (formerly AN-W-18a). The booklet, illustrated, gives "Cushioning Material Conformance—Kimpak Supplied by Kimberly-Clark Corporation," and application examples. Kimberly-Clark Corp.

Pipe Hangers, Vibration Eliminators and Supports

11. **VALUABLE** data for the use of those who buy pipe hangers, vibration eliminators and supports, is contained in Catalog 51 just off the press. Its 96 pages feature functional spring hangers, vibration eliminators and overhead roller assemblies. Swivel action feature of functional hanger allows portions of hanger attached to the fixed support and to the pipe line, respectively, to move at considerable angle to each other. Technical section presents information for the piping engineer, and specifications. The catalog is copiously illustrated with photos and line drawings. Power Piping Divn., Blaw-Knox Co.

Standard Gage—Thread, Plug and Ring Catalog

12. An unusually complete and carefully prepared catalog, No. 51, thoroughly details Republic gages—thread, plug and ring. It is generously illustrated with photos and line drawings wherever such might contribute to easier interpretation of data. All dimensions shown have been checked no less than four times. Standards conform in all vital respects to those adopted by the American Gage Design Committee and the National Screw Thread Commission. Republic Gage Co.

Sockets, Extensions, Adapters and Universal Wrenches

13. **NEW** 122-page catalog lists the complete line of Apex sockets, extensions, adapters and universal wrenches. Believed to be the most comprehensive work of its type, the catalog contains illustrations, dimensional drawings and complete specifications on more than 5,000 tools. Apex Machine & Tool Co.

(Please turn to page 22)

Listen, pardner, how much
SCRAP have you turned in
this week?



Today, the steel business is your business —it needs all your *SCRAP, Now!*

SUPPOSE that every steel user were suddenly told that he had to turn in a half-ton of scrap before he could get a ton of steel. It would start the most gosh-almighty treasure hunt for scrap that ever happened.

In effect, this "no-scrap, no-steel" situation virtually exists. For without *all* the scrap that industry can search out and start on its way to the mills, steel production will surely drop. It's as serious as that.

More scrap is urgently needed. Today the mills are turning out more steel than ever before. But they're scraping the bottom of the barrel as far as scrap is concerned. Defense and domestic demands for steel simply

cannot be met unless at least 100,000 tons of "purchased" scrap roll into the furnaces—*every day*.

The bulk of this scrap must come from industry. That's why we're asking for your all-out help. That's why it's so important that you make the drive for scrap part of your daily operations. Make it your business to encourage every employee to report any obsolete, broken or worn-out machinery, tool or equipment that has seen its day. From this dormant "junk" must come the heavy melting scrap that the mills need most. Don't let your scrap lie idle; send it on its way. How about it, pardner?

You'll find your local scrap
dealers listed in the yellow
pages of the phone directory.



1-1326A

This page would ordinarily be used to tell you about

OUR STEEL WAREHOUSE SERVICE

but, because steel cannot be produced without SCRAP,
we are asking instead for your all-out help in getting
more SCRAP to the mills.

UNITED STATES STEEL SUPPLY COMPANY
WAREHOUSES COAST-TO-COAST

UNITED STATES STEEL

(Continued from page 20)

Catalog Shows 28 Models of Air Cylinders

14. TWENTY-eight different models of air cylinders, each in nine bore diameters, are subject of Catalog Section No. 55. Working drawings and specifications are furnished for each model and size cylinder, both standard and cushioned types, single and double end rods, internal and external threads. Mountings described are Rabbet, Foot, Trunnion, Center Line, Blind End Flange, Rod End Flange and Clevis. Cylinders are recommended for air pressures of 150 psi maximum, and oil pressure of 300 psi maximum. Rivett Lathe & Grinder, Inc.

How to Frame and Hang Mechanical and Electrical Equipment

15. EASY to use manual on how to frame, hang, mount and support many kinds of mechanical and electrical equipment with Unistrut All-Purpose metal framing, is packed with pictures and detailed data on product and applications. Known as Catalog 700 (78 pages) it also contains helpful how-to-order information. Use of Unistrut involves no welding, no drilling; it is 100% reusable and 100% adjustable. The only tools required are a wrench and a hacksaw. The basic channel, nut and fittings are designed to standardize all connections. The channel comes in five sizes (3 gauges) which are available in variety of illustrated combinations. Also illustrated are pipe hangers and clamps, fluorescent fixture hanger fittings, tubing clamps, maple and porcelain cable clamps, pipe roller supports, brackets and the spring-held clamping unit which holds itself in place. Unistrut Products Co.

Cutter and Tool Grinder

16. PICTORIALY catalog M-1734 shows you just about everything the new Cincinnati No. 2 cutter and tool grinder will do. Every one concerned with cutting metal or sharpening cutters will find this catalog of interest. All standard and extra attachments for these machines are also illustrated and described. The Cincinnati Milling Machine Co.

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Aluminum Castings for Defense Work

17. IF you need aluminum castings for your defense jobs, you will be interested in Bulletin 20-A which presents in a concise way, the facilities which Aluminum Industries, Inc., has to offer to industrial companies that need aluminum castings for their defense jobs. The company has one of the largest aluminum foundries in the U. S. for the production of permanent mold, semi-permanent mold and sand castings, with capacity of over 2,500,000 pounds of aluminum alloy castings per month.

Steel Tubing for Process Industries

18. TECHNICAL data on tubing for petroleum, chemical, pulp and paper, food and pharmaceutical processing industries is presented in 8-page bulletin TA 1559, released by The Babcock & Wilcox Tube Co. The bulletin includes analyses and tables of physical and mechanical properties as well as application data for 20 popular carbon, alloy and stainless tubing steels. Tubing from such steels is used in heat exchangers, condensers, boilers, conveying lines and structural or processing equipment where temperature, pressure, sanitation, or corrosive environments are important considerations.

New Twist Drill Catalog

19. COMPLETE line of twist drills is featured in new 12-page DoAll catalog. It includes taper shank drills (including regular and smaller and larger than regular shanks), the various types of straight shanks, three and four fluted drills and drill sets, chatter-free countersinks, combined drill countersinks, sleeves and sockets, and carbide tipped masonry drills. The catalog also contains charts on decimal equivalents of drill sizes, drill feeds and speeds, and tips on drill pointings and web

thinning. Prices and illustrations of all drills are shown for the complete line. The DoAll Co.

Dry Pressed Forgings — What They Are and Can Do

20. COPPER and copper-alloy die pressed forgings are the subject of handy reference book available from the American Brass Co. Booklet provides practical, to-the-point, comparative illustrations to show what die pressed forgings are, what they can do, what they have already done, and what a manufacturer can expect of them. It also contains tabulation of physical properties of copper and copper alloys suitable for forgings.

"Packaged Power" Electrical Systems Insures Quicker Delivery

21. METHODS of obtaining electric power equipment for quick expansion at low cost and with a minimum of critical materials, are outlined in 24-page bulletin GEA-5600 on packaged electric power for industry. According to the bulletin use of "packaged" electrical systems simplifies plant engineering problems, cuts equipment and installation costs, conserves vital materials and manpower, and insures quicker delivery of electrical equipment. Each package is a complete, factory-assembled unit designed for a specific job, ready for operation. The bulletin explains its story in 52 photographs and diagrams. General Electric Co.

Drawn Shell Trimmer Lower Costs — Increased Production

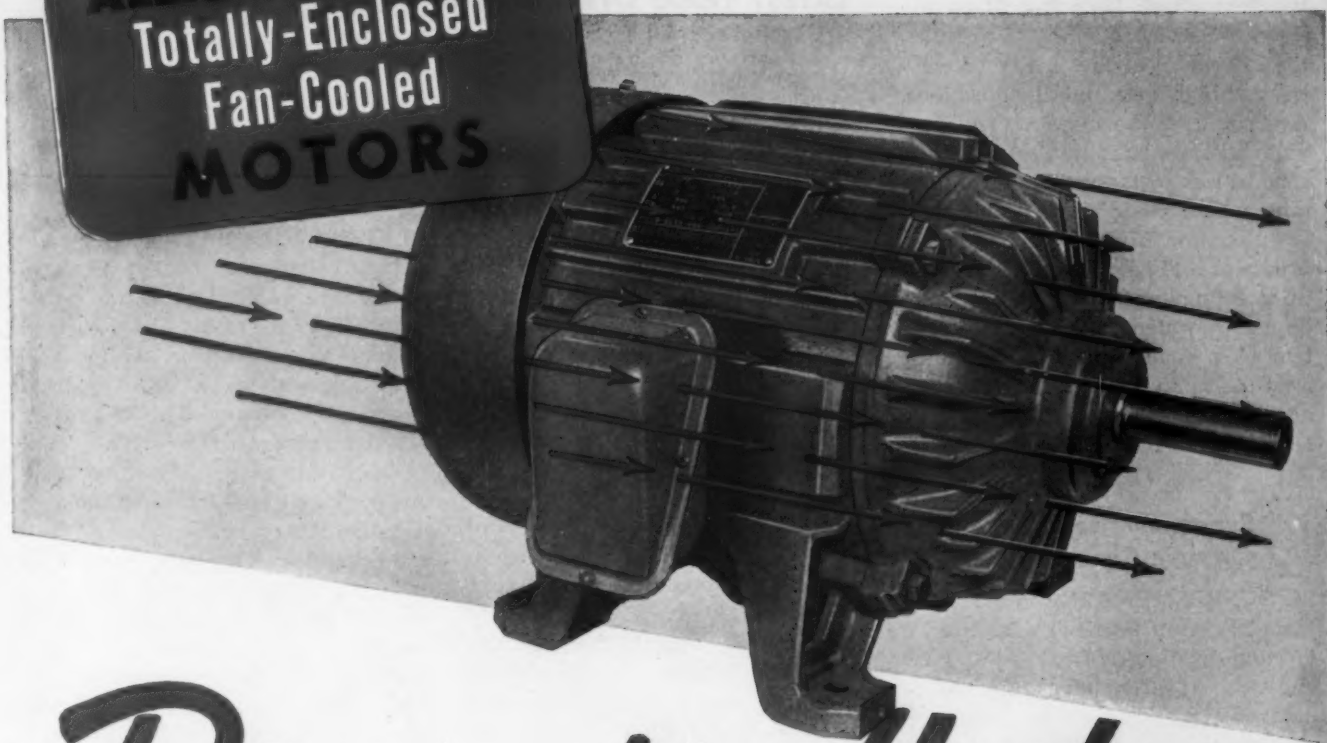
22. UNIVERSAL drawn shell trimmer for mass production or short runs, trims square, round, rectangular and irregular shells. It also beads, knurls and forms. All operations are completed in one work cycle. Bulletin describing this trimmer states that it will lower die costs and give higher production. Dayton Rogers Manufacturing Co.

Homogenous Mixing in Faster Time at less Cost

23. IF your plant production involves materials mixing—plastic

(Continued on page 24)

ALLIS-CHALMERS
Totally-Enclosed
Fan-Cooled
MOTORS



Blows itself clean as a Whistle!

DIRT IS CARRIED AWAY by cooling air blown over the ribbed cast iron frame and bearing housings of this new Allis-Chalmers tefc motor. That means less motor cleaning . . . inspection . . . overhaul!

Concealed air passages and pockets have been eliminated. Dirt can't build up to cause overheating. And as for oily dirt that sticks — just wipe or blow it off.

Studies show that on most applications, totally-enclosed fan-cooled motors more than pay back their extra cost in reduced maintenance. And this new Allis-Chalmers Type APZ tefc motor makes maintenance costs lower than ever before.

Rigid Construction

The frame is cast iron which has high resistance against corrosion and distortion. Bearings are pre-lubricated at the factory and should need no attention for years. Tapped holes with pipe plugs to permit regreasing and to provide grease relief are standard equipment.

Get All The Facts

The new Allis-Chalmers Type APZ totally-enclosed fan-cooled motor is built in all NEMA standard frame sizes from 224* to 505. Also in explosion-proof type. Your A-C Authorized Distributor or District Office has complete information. Call today, or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 51B7225.

A-3427

Texrope and Vari-Pitch are Allis-Chalmers trademarks.

ALLIS-CHALMERS



Sold . . .

Applied . . .

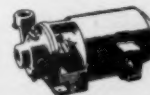
Serviced . . .

by Allis-Chalmers Authorized Dealers, Certified Service Shops and Sales Offices throughout the country.



CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

TEXROPE — Belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.



PUMPS — Integral motor and coupled types from 3/4 in. to 72 in. discharge and up.

*Similar design non-ventilated motors Type APK, also available in frames 203 to 224 inclusive.

(Continued from page 22)

powders, foods, chemicals, liquids, powders, check Item No. 23 on the Reader-Service Coupon, for bulletin in regard to the Entoleter centrifugal high speed mixing machines. According to the maker, they provide homogeneous mixing in faster time at less cost, providing thorough mixing and blending, and amazingly uniform mixtures. The mixer produces a finished mixture at rates up to 250 pounds per minute. It may be incorporated in processing system as a final mixer, or machines may be mounted in tandem, one above the other in a total space of less than six feet of headroom.

Supplement to Eastman Organic Chemicals List

24. SUPPLEMENT 37-3 to the Eastman Organic Chemicals List No. 37 is now available. Listing 77 new chemicals, the list gives the molecular weights, structural formulas, and melting or boiling ranges for many new chemicals listed. Distillation Product Industries, Eastman Organic Chemicals Dept.

High Density Type 85% Magnesia Insulation

25. "CUSTOM-Molded" 85% magnesia pipe covering and block insulation is described in 12-page bulletin. It is termed the ideal insulation for all heat ranges up to 550° — 600° F. It is molded to exact finished size and thickness, providing smooth finish on the inner and outer surfaces. Each size and thickness is accurate and identical. "Custom Molded" exceed modulus of rupture requirements of U. S. Navy specifications, and does not "powder", settle or disintegrate even under heavy vibration. Tables show thickness standards and complementary pipe covering sizes, and heat savings in still air at 70° F. Mundet Cork Corp.

Molded Rubber Parts

26. MOLDED rubber parts are the subject of 16-page booklet describing the design, development and manufacturing facilities of Stowe-Woodward Inc. The brochure includes illustrations and brief descriptions of specific projects in the

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field of molded rubber parts, engineered to operate in unusual extremes of heat and cold and in harsh oils and solvents.

Vibration Fatigue Testers for Parts or Assemblies

27. FOLDER describes a number of vibration fatigue testers for pre-testing any part or assembly to determine weaknesses in the design or selection of materials. The various models accommodate a wide range of types and sizes of products 10 to 100 pounds in weight. Users include large manufacturers in the electrical, electronic, aircraft, aviation, automotive and other fields. All American Tool & Mfg. Co.

Hevi Duty Pit Type Convection Furnaces for Heat Treating

28. BULLETIN IND 451 illustrates pit type convection furnaces for heat treating operations that require temperatures from 250° F to 1850° F. The temperature range makes the furnace suitable for tempering, drawing, annealing, and hardening steel as well as non-ferrous annealing, and solution and aging treatments of aluminum. Large pieces as well as small parts can be treated in the unit. Centrifugal fan is basis of high speed heating with exceptional uniformity of temperature. Hevi Duty Electric Co.

Heating Equipment for Wax, Compounds, Asphalt, Etc.

29. THE Sta-Warm line of compound, asphalt, wax, etc. heating equipment is illustrated and described in six-page bulletin. The line ranges in capacity from one quart to hundreds of gallons. Also described are agitators, dispensing pots and tanks, wax droppers, automatic and variable control wax pots, bench pans, etc. Compound melters are for melting and maintaining pitch, asphalts, waxes, oils, marine

glues, insulating compounds, etc. at a constant temperature within a specific selective range. Controls maintain temperature of compound below its flash point. Sta-Warm Electric Company.

Polyvinyl Chloride Resin made without Plasticizer

30. GEON Resis 404, which is made without plasticizer has greatly extended the application of the polyvinyl chloride resins, is described in detail in new 12-page service bulletin released by B. F. Goodrich Chemical Company. The 404 resins can be processed on conventional plastics equipment, can be calendered, extruded, transfer molded, deep drawn or vacuum forced into rigid products. The bulletin outlines principal applications, discusses physical properties, and gives graph on tensile and flexural strengths, modulus of elasticity, heat distortion temperatures, impact and chemical resistance, and stiffness.

Crobal Cast Alloy Cutting Tools Advantages, Limitations, Uses

31. PUBLICATION 101 tells about the merits of Crobal cast alloy cutting tools and gives the properties of three grades of Crobal that the manufacturer states bridges the gap between high speed steel and carbide tool applications. It describes and illustrates forms and sizes of Crobal tools available for turning, facing, milling, boring, reaming and other operations. Crobal is a non-ferrous cast alloy. It consists principally of particles of tungsten and chromium carbides rigidly held in a matrix of cobalt. Crobal, Inc.

Boring, Drilling, Milling Machine Designed for Speed, Accuracy

32. THE Portage horizontal boring, drilling and milling machine is designed to meet the speed and accuracy demanded to today's operations. A twelve-page catalog gives full operating and construction details of this machine which has large dials for easy reading to a thousandth of an inch. The vertical and horizontal attachments are described in detail, as is the scan-a-scale microscope. The Portage Machine Co.

(Continued on page 178)

The ERIE

finishing touch



View showing a few of a large battery of spray booths for painting smaller pieces



Plating is done with the most up-to-date equipment, some of which is shown in this photograph



A corner of the painting department showing spray booths in which television windows and other large pieces are painted



A group of busy workers in a section of the hot stamping and foiling department

● **PLATING**

● **PAINTING**

● **FOILING**

... TRANSFORM YOUR CUSTOM INJECTION MOLDED PRODUCTS INTO PIECES OF RARE BEAUTY

THE difference between an ordinary, run-of-mine plastic product and an article of startling beauty is often in the finishing. In its recently expanded facilities ERIE has spared no pains or expense to provide the finest in equipment for every type of finishing and decorating and to put it in charge of expertly trained personnel.

Over thirty painting booths provide for economical production on the smallest or largest pieces. Hot pressing and foiling and plating departments provide rich metallic finishes. Paint is combined with the metallic finish in sparkling "three dimensional" plastic gems of enduring beauty.

One of a series of advertisements describing Erie Resistor's complete facilities for quality custom injection molded plastics.

Plastics Division



ERIE RESISTOR CORP., ERIE, PA.
LONDON, ENGLAND . . . TORONTO, CANADA

L&I
REAMERS
 offer a
Broader Range
 of
STANDARD
Sizes

LAVALLEE & IDE, INC.

FRACTIONAL sizes
 1/16" thru 1-1/2"
 are STANDARD

WIRE GAGE sizes
 #1 thru #60
 are STANDARD

LETTER sizes
 A thru Z
 are STANDARD

L&I's broader range
 of standard sized
 reamers of all types
 reduces the need for
 costly specials.
 In addition, you get
 matchless quality
 and performance.
 See your L&I
 Distributor today.

L&I

The Reamer Specialists

LAVALLEE & IDE, INC.
 CHICOPEE, MASS.

F.O.B.



FILOSOFY OF BUYING

ROLLBACKS seem to be the order of the day. Arizona's liberalized State Purchasing Act of 1951, which was supposed to go into effect in June, has been held up for referral in the general election vote in November. Meanwhile, the 1943 Act which was superseded is in question as to its constitutionality, with two test cases in litigation and a third on the court docket. If that one is ruled out, according to the State Attorney General, the governing statute will be the Act of 1925, as amended in 1927 and 1933.

MOST acute shortage in the government purchasing program, says columnist Frederick Othman, is the shortage of warehouses in which to store \$27,000,000,000 worth of merchandise avidly acquired by federal buyers and put into storage. An example in point is the accumulation of 143,971,000 pounds of coffee, representing something more than an 11 months' supply for the armed forces, which gulp down about 12,870,000 pounds of the brew each month. A good deal of the stored merchandise is scheduled for disposal as surplus, which ought to relieve the situation. But the trouble with that program is that the buyers eagerly scan the classified ads and buy it back, which immediately raises the question of where to put it.

JUST about two years ago, we devoted considerable editorial space to the tribulations of British industrial buyers under the controls and regulations then in effect in the United Kingdom, and expressed the hope that a similar situation might not be visited upon buyers in the United States. Now the cycle has moved on to the point where these sympathies and hopes have reversed their direction. A commentator in

The Purchasing Journal (London), viewing the "piece of paper 6 sq. ft. in area" on which the CMP chart was presented with our June issue, says:

"One wonders when our own similar scheme gets going if it will have to be quite so complicated. It is to be hoped not."

We share that hope, Mr. White. We also share your amazement and amusement that "waterfowl feathers" should be included as a proper subject for controls, though we have become somewhat inured to such exotic classifications; they are important to somebody. The 103 field offices are easier to explain; we have a 3000-mile stretch of territory to cover, from ocean to ocean, and about 1200 miles from border to border, not to mention that field office in Honolulu; it could be a long way between stops. The commentary continues:

"It would also be interesting to know how really effective this extremely elaborate set up is and if the famous go-getter methods of American business find a lot of holes in the nets."

Alas, we must report that the 1951 version of CMP stumbled rather badly on its first trial run (as was widely predicted, though not according to plan) and we may be faced with the necessity of using another 6 sq. ft. of paper to note early revisions. As to loopholes, both the NPA Administrator and the OPS Counsel have already felt it necessary to issue "crackdown" warnings against violators, so there has been at least some nosing at the nets. Just how big the holes may be, and whether the noses will be caught, remains to be seen.

LOCAL purchases for the new Army air base are a matter of such civic concern at Lake Charles, La., that the "First Local Buy" made headlines in the local press. The purchase, authorized by Lt. Col. W. E. Ober, contracting officer,

was \$16 worth of duplicating paper bought from the Lake Charles Office Supply, Inc. In an exclusive interview on this occasion, Col. Ober declared that the purchase is only "a drop in the bucket", to coin a phrase, as compared to the eventual volume of local buying to be done by the air base.

REALISTIC P. A. George Herpich of Worcester, Mass., refers to his surplus disposal auctions as "rummage sales". At a recent session, he enriched the city treasury by \$1 for a bake oven and \$2 for a superannuated washing machine from the Girls Trade High School, both destined for scrapping, and \$35 for a 6-year-old chestnut horse formerly on the staff of the Parks and Recreation Department. Highest bids were \$105 for a 1943 jeep and \$266.50 for a set of snowplow blades. All but one of the 26 items offered were snapped up. A pair of ancient lighting fixtures, which failed to appeal to the aesthetic sense of potential buyers, were held over as the nucleus for the next sale.

WE have always contended that purchasing is a highly specialized function, yet we were scarcely prepared to read about a Philadelphia purchasing forum devoted entirely to cosmetics. The meeting in question was held on August 22nd, in connection with the annual show of the Philadelphia Cosmetic Association. Topics covered included:

- "Purchasing under Rigid Controls"
- "Purchasing for Christmas"
- "Purchasing with Changing Personnel"
- "Purchasing for Promotion"
- "Purchasing to Cover Advertising"
- "Purchasing with Flexibility"

IN the first cycles of conversion and reconversion we got used to the fact that a descriptive company name might have very little logical connection with the products produced. Still it is somewhat startling to receive an announcement reporting that the Atlas Imperial Diesel Engine Co. (Hayward, Cal.) has changed its corporate name to United Can & Glass Co.

PERMACEL News Graphic

SPEEDING PRODUCTION WITH INDUSTRIAL TAPES



PHILCO FINDS NEW STAIN-RESISTANT TAPES speed production, protect white and near-white surfaces from stain or residue. PERMACEL-71 used above, holds metal letters in proper alignment until they are permanently affixed.



SPEEDIER, LESS EXPENSIVE "BUNDLING" PERMACEL Cloth Tape speeds assembling jobs for R. O. W. Distributors of Rocky Mount, Va. Tape is easily applied; sticks tightly, is easily removed.



Permacel
INDUSTRIAL
TAPES

INDUSTRIAL TAPE CORPORATION
NEW BRUNSWICK, NEW JERSEY

Makers of **TEXCEL** Cellophane Tape and a complete line of pressure-sensitive tapes for industry.

FREE. JUST OFF THE PRESS. New 32-page use book. Send for your copy today. Over 100 close-up photographs of new, dollar-saving uses of tape. Write Dept. 4C.



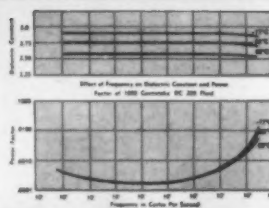
SEALING ROOF JOINTS —is typical of the time-and-cost-saving uses of PERMACEL Tapes. The Redi-Built Company of Corvallis, Oregon, used PERMACEL Tapes for this purpose in building the above storage bins.

**DOW CORNING
SILICONES**

Heat-Stable, Moisture-Proof SILICONE DIELECTRIC MATERIALS are available in the following forms:

LIQUID DIELECTRICS

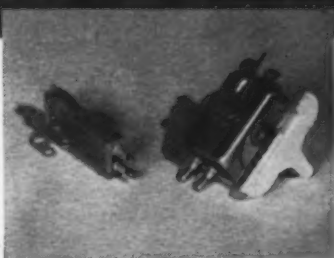
DOW CORNING 200 FLUIDS are a series of clear, inert liquids, notable for their thermal stability and for their remarkably flat viscosity-temperature slopes. Available in viscosities from 0.65 to 1,000,000 centistokes. Pour points range from -123° to -47°F . and flash points range from 30° to 600°F . Low dissipation factors at elevated temperatures or at high frequencies, inertness to moisture, oxidation resistance and heat stability make Dow Corning 200 Fluids unique among liquid dielectrics.



As indicated by these curves, neither frequency nor temperature changes have any pronounced effect on the power factors or dielectric constants of Dow Corning 200 Fluids. Power factor and dielectric constant of 1000 cs. fluid at -17° , 23° , and 83°C . are plotted against frequencies ranging from 10 to 10^{10} cycles per second.

DIELECTRIC COMPOUND

DOW CORNING 4 COMPOUND is a nonmelting water-repellent dielectric paste which retains its grease-like consistency at temperatures from -70° to 400°F . It is highly resistant to oxidation and to deterioration caused by corona discharge. Power factor is less than 0.003 at frequencies up to 10,000 megacycles; volume resistivity is more than 10^{12} ohm centimeters at temperatures up to 400°F ; dielectric strength is more than 500 volts per mil at a 10 mil gap. Dow Corning 4 meets all requirements of Specification AN-C-128a.



Dow Corning 4 packed in phonograph pick-up head cartridges increased crystal service life 20 times. The silicone compound prevents Rochelle Crystals from deteriorating due to absorbed moisture. It also acts as a viscous damping medium, thereby reducing excess vibration and enabling the head to handle a much higher frequency.

ELECTRICAL INSULATING VARNISHES

DOW CORNING 996 VARNISH dries tack-free in not more than 3 hours at 150°C . Dielectric strength measured with 2 inch electrodes on 2 mil films baked for 16 hours at 150°C . is 1000-2000 volts/mil, dry, and 500-1500 volts/mil, wet. Heat flexibility is more than 100 hours at 250°C . Cured films have good resistance to dilute acids, concentrated hydrochloric acid, and dilute or concentrated alkalis.

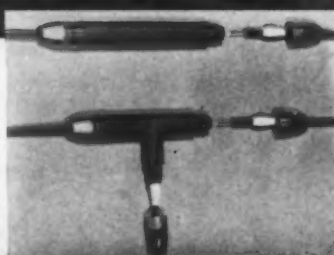


Flashover in high voltage television power supply coils can set ordinary organic varnish aflame. To eliminate this fire hazard, coils are impregnated with Dow Corning 996. Highly resistant to arcing, 996 provides positive protection against carbon tracking for the life of the entire set.

SILASTIC*, THE DOW CORNING SILICONE RUBBER

Silastic combines the remarkable heat stability and moisture resistance of resinous silicones with the physical properties of rubber, including resilience, shock and abrasion resistance, and resistance to both mechanical and electrical fatigue. Its dielectric properties show little change over a wide range of frequencies, even after aging at high temperatures. The surface resistivity of Silastic is high, and its thermal conductivity is about twice as great as that of either organic rubber or resinous insulating materials.

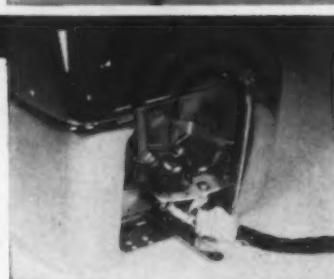
*T.M. REG. U.S. PAT. OFF.



Completely eliminating taped connections on aircraft antennae, white Silastic seals reduce static and corona discharge by as much as 90%. They retain their resilience as well as their dielectric properties, excluding moisture and foreign matter after long exposure to the full range of ground and stratospheric temperatures.

SILICONE-GLASS LAMINATES

DOW CORNING THERMOSETTING RESINS are used to bond inorganic fabrics and finely divided particles such as powdered metals or mica. Typical $\frac{1}{8}$ " silicone-glass laminates have a flexural strength of 22,000 to 45,000 psi; water absorption after 24 hours of 0.25%; dielectric strength with continuous filament cloth of 250 volts/mil or more; power factor of 0.002 at 1 mc; loss factor of 0.007 at 1 mc; wet insulation resistance of more than 10^{12} ohms; arc resistance of 300 seconds and a heat distortion value above 250°C .



For maximum dependability and long service life, silicone-glass terminal blocks and contactor bases are being used in late model automatic toasters. Tests prove that Dow Corning silicone resin bonded glass laminates are more rigid, more heat-stable, more resistant to moisture and easier to fabricate and assemble than conventional materials.

MAIL THIS COUPON TODAY!

DOW CORNING CORPORATION, DEPARTMENT DC-10, MIDLAND, MICHIGAN
Please send me full information on the subjects checked:
☐ Dow Corning 200 Fluids ☐ Dow Corning 4 Compound ☐ Dow Corning Electrical Insulating Varnishes ☐ Silastic ☐ Dow Corning Silicone-Glass Laminates ☐ Reference Guide to Dow Corning Silicones

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In Canada: Fiberglas Canada Ltd., Toronto • In Great Britain: Midland Silicones Ltd., London

FIRST IN
SILICONES

**DOW CORNING
CORPORATION**

MIDLAND, MICHIGAN

B.F. Goodrich GROMMET BELTS AT WORK



This giant barrel is loaded with hides soaking in an acid bath. It's the first step in making a pair of shoes.

First step to pair of shoes

New hides are dumped into that drum, with acid, and tumbled round and round for hours. Four rubber V belts on each side of the barrel do the work. But turning that 8-foot barrel full of heavy hides put a terrific strain on the belts. They would wear out in only four months. Then the whole process was stopped. No way to get a shoe to market. An entirely new kind of belt was needed. See the following pages to find out how this problem was solved.

Tumbling barrel (continued)



The belts on this drive are under terrific tension turning the big rough-surface barrel shown on preceding page.



The problem described on preceding page was solved by a B. F. Goodrich man for the Hartland Tanning Co. of Hartland, Maine. He recommended that the short-lived belts be replaced with B. F. Goodrich grommet belts. BFG grommet belts *look* the same as ordinary V belts but, because of an entirely different construction principle, grommet belts carry heavier loads, stand *more* shocks, and last longer than ordinary belts. On this drive, BFG grommet belts are averaging 10 months — $2\frac{1}{2}$ times as long as the former belts.

20 to 50% Longer Life

Patented grommet belts by B. F. Goodrich represent the only basic improve-

ment since invention of the V belt. Belts last 20 to 50 per cent longer, depending on service. (The more severe the service the greater the increase over ordinary belts.)

What is a Grommet?

A grommet is like a giant cable except that it's *endless*—a cord loop built up by winding heavy cord on itself. There is no overlapping cord *section* as in all ordinary belts. Most belt failures occur in these sections where cords overlap!

All Cords Put to Work

Each grommet and every part of a grommet carries its share of the load. In ordinary belts under high tension the center cords "dish" because tension is greater near the driving faces. Dished cords are doing less work, not pulling their share. Grommet belts have no center cords, there is no dishing—therefore much more strength in proportion to cord volume.

Better Grip, Less Slip

Grommet belts have more rubber in relation to belt size. Without any stiff overlap, they're more flexible, grip pulleys better. Size for size, grommet belts give $\frac{1}{3}$ more gripping power, pull heavier loads with a higher safety factor. Because there is less slip, there is also less surface wear.

They Cost No More

You save belt costs because belts last longer, save production costs because machines keep running with fewer interruptions, save maintenance costs because they need less attention, yet cost not one cent more than others. Grommet belts are made in C, D and E sections. They are patented by B. F. Goodrich. No other V belt is a grommet belt (U. S. Patent No. 2,233,294).

See "X-ray" Belt

A special demonstrator "X-ray" belt has been made to show the grommet construction. Ask your local B. F. Goodrich distributor to show it to you.

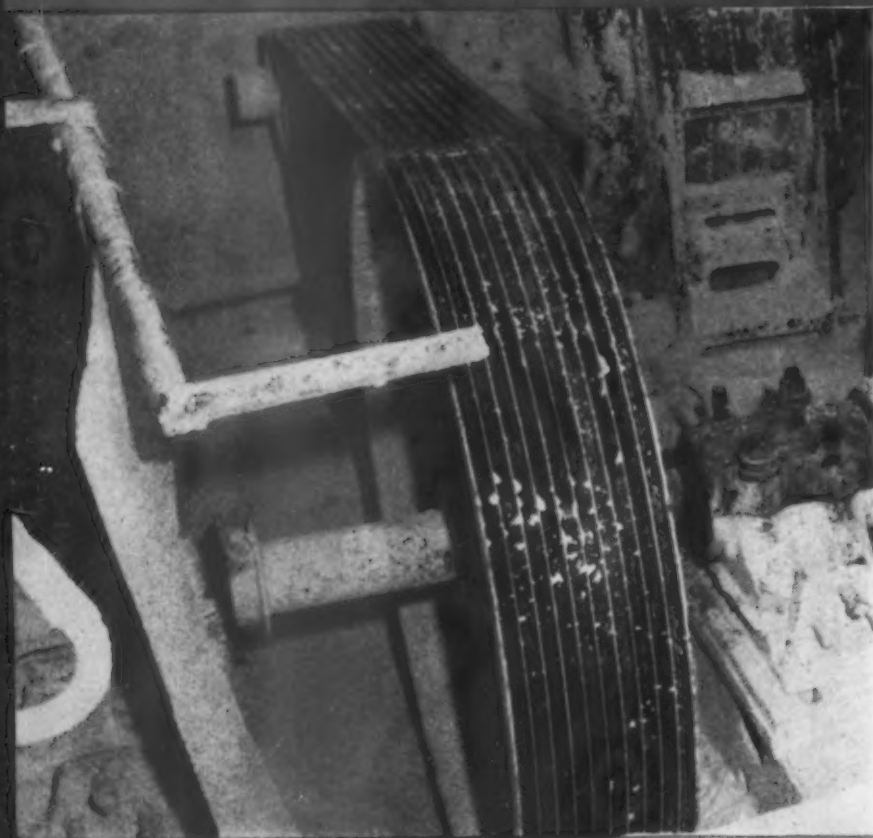
Pulp beater ▶

This drive works 24 hours a day, 7 days a week at Tamko Asphalt Products, Inc., Joplin, Mo., furnishing power to a pulp beater that shreds the basic material for roofing. These B. F. Goodrich grommet belts have been running constantly for three years without losing a single minute due to belt trouble.



B.F. Goodrich

GROMMET BELTS AT WORK



Saved \$100 a week

What would you do if you were spending a \$100 a week to replace failing V belts on one drive? That was the case in this mill—ordinary V belts failed in a week or less. They couldn't carry the terrific power load.

The company called in a BFG sales engineer and B. F. Goodrich grommet V belts were installed. That was 5 months ago and the grommet belts look as good today as the day they were put on.

Other users' experiences confirm this:

"The belts we had been using lasted 5 or 6 weeks . . . B. F. Goodrich grommet belts are in their sixth month of service."

"Previous belts suffered from shock loads, wore out fast . . . BFG grommet belts have been in service 2 years with no shut-downs . . ."

← BFG belts solved shutdown problem.

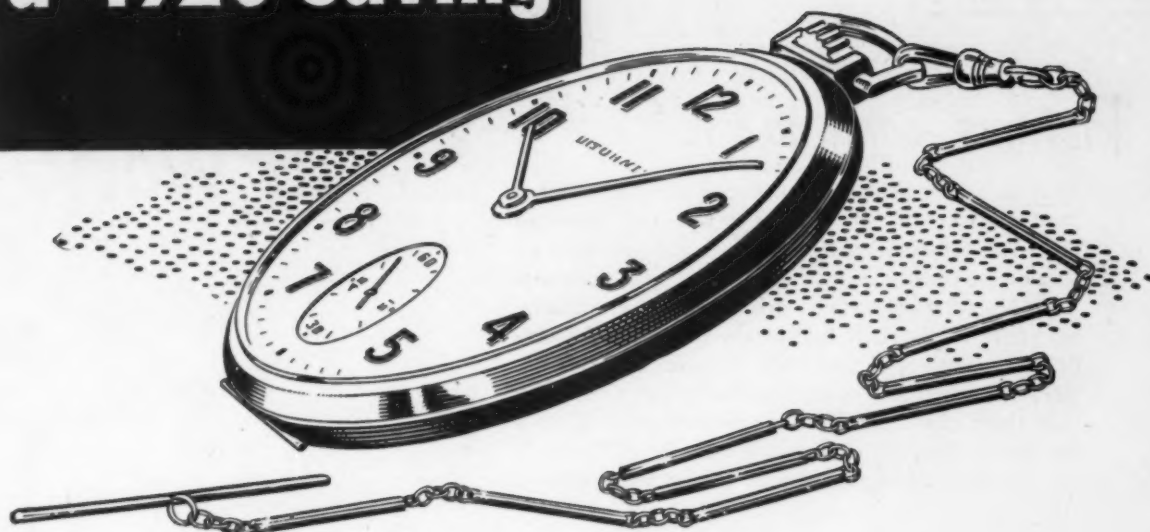
These typical examples tell you why B. F. Goodrich grommet belts are superior to ordinary V belts. They prove that grommet belts last 20 to 50% longer than other types—yet cost no more.

Grommet V Belts BY

B.F. Goodrich
FIRST IN RUBBER

The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio

**Every Minute Meant
a \$1920 saving**



Big return for a minute's time ... but to a leading Philadelphia manufacturer* a 5 minute interview did result in a total saving of \$9600.

This manufacturer faced a problem that's common to many plants today. His ten machines have 560 bearings—560 bearings that must be kept lubricated if production is to be kept uniform, rejects few. That lubrication job was taking four man hours every week and, because of human fallibility, there was always the potential danger that one of these many bearings had been overlooked or under lubricated.

An Alemite Lubrication Engineer was called in. He made his presentation in just 5 minutes—5 minutes that saved \$9600. He told the manufacturer the facts of installing a modern Alemite Centralized Lubrication System. That system is in the plant today. The result: assurance of continuous, correct lubrication, few rejects and shut downs, and the addition of a whole hour's production time every working day.

Call Your Alemite Lubrication Engineer

No matter what size or type of plant you operate, Alemite can show you

dozens of ways to save through the more efficient handling of petroleum products. Call your local Alemite Industrial Distributor now or send for the free booklet "11 Ways to Cut Production Costs." Simply attach the coupon below to your letterhead. Dept. U-101, 1850 Diversey Parkway, Chicago 14, Illinois.

*Name on request.

ALEMITE

MEANS EVERYTHING FOR LUBRICATION

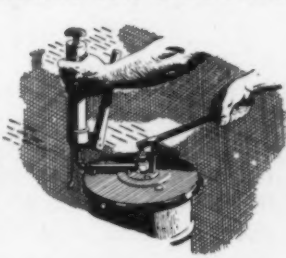
1. Methods 2. Lubricants 3. Equipment

Another Product of Stewart-Warner

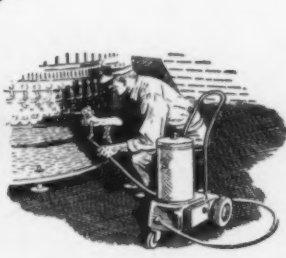
Alemite Cuts Costs 3 Ways



1. In transferring lubricants... cuts man hours 63% for every 100 pounds transferred. No mess, no contamination.



2. In loading grease guns... saves 3¼ man hours for every 100 pounds of lubricant loaded into hand guns.



3. In applying lubricants... saves up to 23.9 man hours for every 100 pounds of lubricant applied to bearings.

**FREE! Valuable booklet—
"11 Ways to Cut Production Cost"**

(Simply attach to your letterhead)

ALEMITE, Dept. U-101
1850 Diversey Parkway, Chicago 14, Ill.

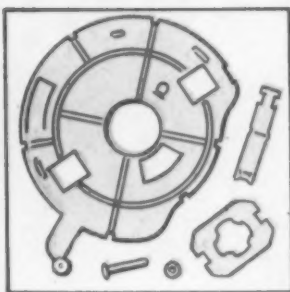
We'll include facts on the new Alemite Oil-Mist System, too—(OIL-MIST atomizes oil into mist, circulates it to bearings under pressure. Increases life of bearings as much as 17½ times).

Name.....

Company.....

City..... State.....

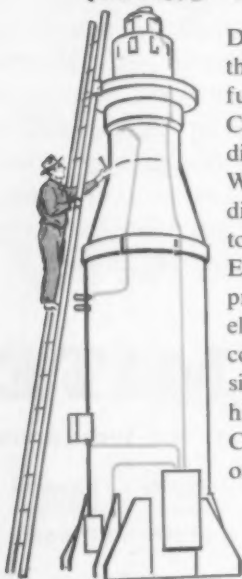




Pictures "come to life"

Ever look through an old-time stereoscope? Remember the fascination of three-dimension pictures? Now add the vivid, full-color of Kodachrome and you have an idea of the breathtaking realism made possible with a View-Master Stereoscope—price, two dollars retail—anywhere in the U.S.A. But there's a lot of close-fitting, smooth-operating brass stampings in this device, and, when they're made at the rate of a million a year, there's no time for fussing with off-gage, off-temper metal. Anaconda Brass is the choice of Sawyer's Inc., Portland, Oregon, makers of the View-Master.

World's longest water tunnel



Driven through solid rock for 117 miles, this underground aqueduct will eliminate future water shortages in the New York City area. The new tunnel, built under the direction of the New York City Board of Water Supply, measures up to 21 feet in diameter and extends from the Catskills to New York City. Thousands of feet of Everdur Electrical Conduit are used to protect important control wiring for the electric sluice gate hoists, pumps and recording devices. Junction boxes in corrosive locations are also made of one of the high-strength, corrosion-resistant Everdur Copper-Silicon Alloys. Write for a copy of Publication E-12.

PS

With the rapid changeover facing American Industry today, much time can be saved by getting the right answer, quickly, to new metalworking problems. The service files of our Technical Department represent many years of experience with the metalworking field and contain much practical information on copper and copper alloy applications. If you feel we can help, don't hesitate to write, addressing The American Brass Company, Waterbury 20, Connecticut.

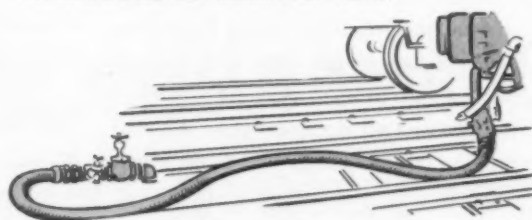
ANACONDA METALS at work



Because the cow won't cooperate

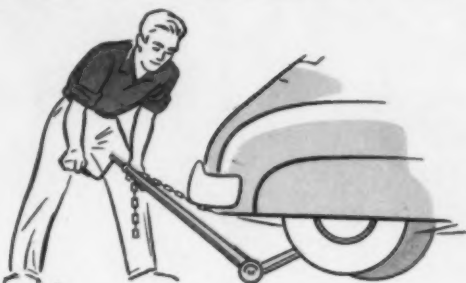


This unique milk-bottling valve features an air release tube telescoped into a second larger tube. Advantage: Fast air venting speeds up the bottle-filling operation. Anaconda Nickel Silver was selected for the most important parts because this silvery-white metal is attractive, readily workable, easy to clean—and keep clean. The Specialty Brass Company, Kenosha, Wisconsin, manufactures the Kleen-Fill Valve.



An "American" short story on railroading

Many of our railroads have found a simple, economical answer to the problem of supplying live steam to cars and coaches standing on sidings or in railroad terminals waiting for a locomotive to hook on. It's in the form of "American" Flexible Metal Tubing. No joints to repack—simple to connect and disconnect, they save dollars in steam and maintenance expense. There are thousands of other applications where "American" Flexible Metal Hose or Tubing is used to convey steam, oil, air and other liquids and gases. Catalog CC-300 tells all. Want a copy?



Jack of all cars

Ever have trouble changing a flat on that low-slung car of yours? Well, here's a jack that eliminates the headache. Made by the Triangle Jack Co., Inc., of Wichita, Kansas, it can be instantly adjusted to suit the road clearance of any car. An Everdur Copper-Silicon Alloy is used for an important part of the screw mechanism because the manufacturer found it stronger, tougher and generally superior to all other non-ferrous metals tried.



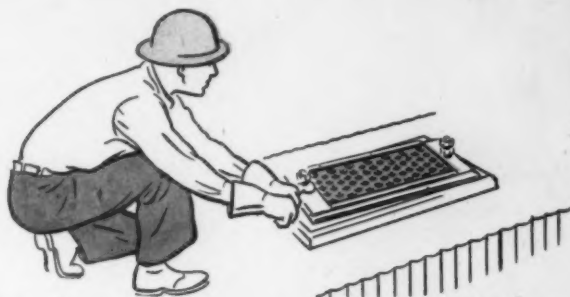
We do this in self-defense

For many years our French Small Tube Branch has manufactured small diameter, thin-gage tubes of the highest accuracy commercially obtainable. One of the reasons for this is the constant use of the bore telescope on redraw stock . . . for a *small* defect in a large tube would mean a *large* defect in a small tube. Since a tube with an imperfect bore could not escape our final tests and inspection, it would be rejected and scrapped . . . hence, we have a mighty good reason for ferreting out any possible imperfections right at the start.



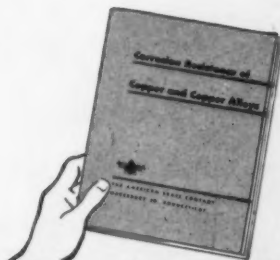
What's so fascinating about a fire hydrant?

It all depends on the point of view. To the city engineer it's a comforting thought to know the manufacturer used the right metal in the right place. The stem, for instance, is one of the most vulnerable parts of a hydrant. It is subject to unusual stresses, strain and corrosive attack—and it has to be there when you need it! Leading hydrant manufacturers are using Everdur Copper-Silicon Alloys in increasing quantities for stems, stem-nuts, seat rings, drip valve holders, washers, bolts, barrels and other parts where a strong, tough, corrosion-resistant metal is required.



No chance for replacement here

Expansion and contraction are important problems in bridge and highway construction. A bearing surface capable of supporting the tremendous, shifting weight of the superstructure must be provided. Bridge plates of Anaconda Rolled Phosphor Bronze, one of the best bearing metals known, have been installed in many of the country's largest structures, including the Macombs Dam Bridge approach of the Major Deegan Expressway, New York City. Fabricated with graphite-lubricated inserts in trepanned grooves by Merriman Brothers, Inc., Boston, and used in conjunction with a rocker assembly, these Anaconda Bridge Plates will withstand lateral movement in any direction from now on.



YOURS-FOR THE FIRST TIME! 25 years of corrosion-resistance data ...in 24 pages

This brand new booklet is the first of its kind in the brass industry. It explains the chemical and physical nature of corrosive attack in its various forms. Included is a tabulation indicating the relative corrosion resistance of the principal types of copper and copper base alloys when in contact with 183 different corroding agents frequently encountered. A penny post card will bring your copy of Publication B-36. Address: The American Brass Company, Waterbury 20, Conn.

ANACONDA

the name to remember in

COPPER·BRASS·BRONZE



Hear about the revolution in Cleveland?

Rolling out of Cleveland these days is a revolution in armored warfare.

It's the T-41 "Walker Bulldog"—the first U.S. tank to be built *around a gun* instead of an engine.

But the T-41 is involved in a *production* revolution, too! Though assembled in Cleveland, its actual parts and mate-

rials come from *two thousand* factories ... in nearly every state!

This "production team" system is producing miracles. But it produces new timing problems, too. How do you bring in two thousand units ... at the right time?

These production experts know the answer. When they want parts and materials fast, they use the service that *gets there first*. They use Air Express!

Whatever your business, Air Express speed can make your deadlines, increase your profits. Here's why!

IT'S FASTEST—Air Express gives the fastest, most complete door-to-door pick-up and delivery service in all cities and principal towns, *at no extra cost*.

IT'S MORE CONVENIENT—One call to Air Express Division of the Railway Express Agency arranges everything.

IT'S DEPENDABLE—Air Express provides one-carrier responsibility all the way and gets a *receipt upon delivery*.

IT'S PROFITABLE—Air Express expands profit-making opportunities in distribution and merchandising.

For more facts call Air Express Division of Railway Express Agency.



AIR EXPRESS

GETS THERE FIRST

One way to buy bags...



and the right way

*What I require
when buying bags...*

1. Strength and good looks
2. Sharp printing
3. Technically trained
bag salesman
4. Dependable source
with long experience
5. Bags designed to my pro-
duct to increase sales!

BAGS FOR ALL INDUSTRY AND AGRICULTURE



- Topmill burlap bags
- Saxolin open mesh bags
- paper and Multiwall bags
- cotton bags of all kinds
- combination bags, liners and specialties

for Better Bags... Better Buy Chase

CHASE BAG CO.

GENERAL SALES OFFICES: 309 W. JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MEMPHIS • BUFFALO • ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE
PITTSBURGH • KANSAS CITY • LOS ANGELES • MINNEAPOLIS • GOSHEN, IND. • PHILADELPHIA • NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY
OKLAHOMA CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLNGEN, TEXAS • CHAGRIN FALLS, O. • WORCESTER, MASS. • CROSSETT, ARK. • SAN FRANCISCO

Choose Chase for all 5 features

Drawing names out of a hat may be one way to make a decision. But in buying bags we feel sure that you'll want to choose the container that assures the best protection for your product, the best acceptance of your product. Call in your Chase Salesman. He's technically trained to analyze your needs . . . he's supported by more than 100 years of experience in providing better bags for American industry and agriculture.

THAT P&H AC WELDER LOOKS
GOOD TO ME, JIM. WE CAN
GET IT OFF THE FLOOR
—AND HAVE MORE
ROOM TO WORK!

THAT'S RIGHT, BILL— AND WITH
CONTROL AT THE WORK WE
GET MORE DONE, AND
DO IT BETTER!



Specialized Training Metal Welding Fabrication

1 week to 18 months

**Harnischfeger Welding
Training School**

In conjunction with
**Milwaukee School
of Engineering**

Write to P & H today
for further details

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Excavators • Overhead Cranes • Hoists • Arc Welders and
Electrodes • Soil Stabilizer • Crawler and Truck Cranes
• Diesel Engines • Crane Loaders • Pre-assembled Houses



2257

Save floor space, cut welding time for more production at lower cost

... use P&H AC Arc Welders with
exclusive Dial-lectric remote control

Give yourself more room for your production needs: Mount your P&H Welder off the floor, out of the way.

Dial-lectric remote control lets you do this. Your operator can turn the heat on *at the work*. It also cuts down his "walking time" . . . turns it into *welding time* for increased output.

Besides saving space P&H Dial-lectric control eliminates cores, coils, sprockets, gears and other moving parts that cause excessive maintenance and downtime.

P&H AC Welders are available in a full range of sizes up to 625 amps. See your P&H representative or distributor for full details on how this outstanding welder can save you time and money.

FLAT SPRING STEEL

Photo courtesy U.S. Tool Company, Inc.



**You can always count on Roebling
for absolutely uniform quality**

FOR FLAPPER VALVES, shoe shanks, measuring tapes! For steel rules, curtain springs, snap springs, lock springs, drop wires, sinker steel and a thousand and one other exacting uses, you'll find that Roebling high carbon flat mechanical spring steel is unsurpassed.

Roebling's complete facilities for producing flat spring steel give us positive control over all phases of manufacture. The final product is dimensionally and metallurgically uniform...cuts down machine

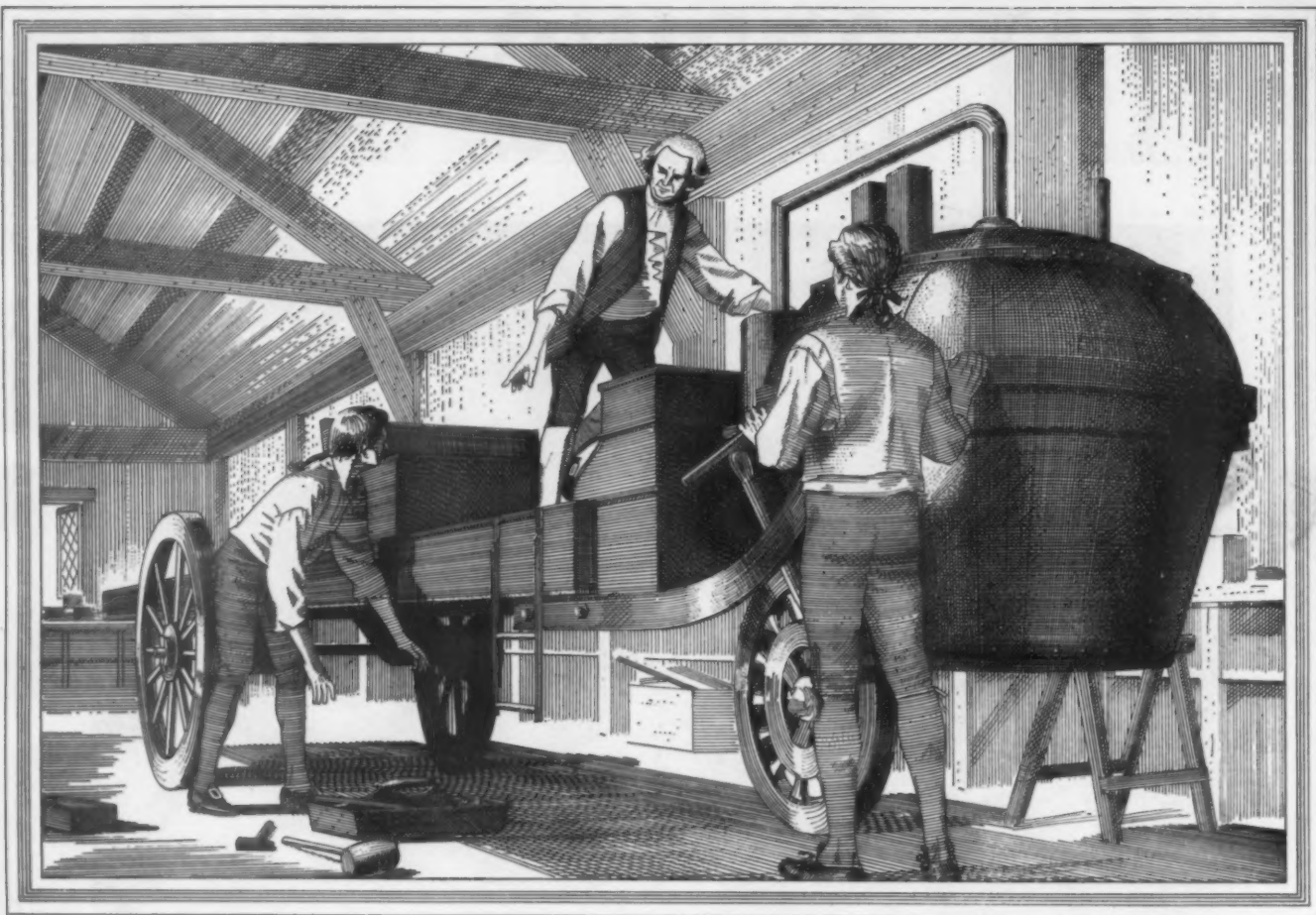
stoppages...minimizes rejects. And Roebling flat spring steel is made as you want it—annealed, hard rolled untempered; scaleless tempered; tempered and polished, blued or strawed.

Large quantities of Roebling specialty wires—flat, round and shaped—are required today in the national rearmament program. You can look to us, however, to do everything possible to meet your requirements. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

Atlanta, 934 Avon Ave ★ Boston, 51 Sleeper St ★ Chicago, 5525 W. Roosevelt Rd ★ Cincinnati, 3253 Fredonia Ave ★ Cleveland, 701 St. Clair Ave, N.E. ★ Denver, 4801 Jackson St ★ Detroit, 915 Fisher Building ★ Houston, 6216 Navigation Blvd ★ Los Angeles, 216 S. Alameda St ★ New York, 19 Rector St ★ Odessa, Texas, 1920 E. 2nd St ★ Philadelphia, 230 Vine St ★ San Francisco, 1740 17th St ★ Seattle, 900 1st Ave, S. ★ Tulsa, 321 N. Cheyenne St ★ Export Sales Office, Trenton, N. J.





It took craftsmanship to build locomotives by hand!



The French inventor, Nicholas Cagnot, had no other choice.

In 1769, machines were not available to help him build his pioneer steam locomotive . . . with a speed of four miles per hour, and a stop every fifteen minutes to build pressure.

Cagnot applied his craftsmanship to every part, including the bolts and nuts. He gave great heed to forming his fasteners, knowing that the strength of his entire assembly rested on them.

Makers of modern locomotives are even more aware of the need for quality fasteners. They know fine fasteners are vital to today's stepped-up produc-

tion . . . to speed and strengthen assembly, save scarce materials by reducing wasteful rejects. Fortunately, these contemporary craftsmen have *specialists* to aid them, like the RB&W worker in the illustration. He specializes in fasteners alone, devoting a craftsman's skill to producing bolts, nuts, screws and rivets of uniform accuracy, dependability and physical properties . . . backed up by 106 years of RB&W experience in making the finest fasteners.

We're working full speed to make strong the things that make America strong. We welcome your fastener problems. Address your inquiries to RB&W at Port Chester.



RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

RB&W *the complete quality line*

**106 YEARS MAKING STRONG
THE THINGS
THAT MAKE AMERICA STRONG**

Plants at: PORT CHESTER, N. Y., CORAOPOLIS, PA., ROCK FALLS, ILL., LOS ANGELES, CALIF. Additional sales offices at: PHILADELPHIA, DETROIT, CHICAGO, DALLAS, OAKLAND. Sales agents at: PORTLAND, SEATTLE. Distributors from coast to coast.

In Your *Cylindrical* or *Centerless* Grinding...



Grinding a large cylindrical part to exact tolerance and degree of finish. The Norton range of specifications enables you to select exactly the right wheel for work like this.



A plunge-cut grinding job to a shoulder on a centerless machine. Units being ground are textile machinery parts, for which wheels of Norton ALUNDUM* (fused alumina) in the correct grain size and grade, give best results.



Shaping a wheel by crush truing, with hardened steel crushing roll shown in raised position. Both Norton ALUNDUM and CRYSTOLON* wheels can be crush trued, to give excellent results in this rapidly growing method of grinding intricate O. D. contours.



HANDY ILLUSTRATED BOOKLET gives you the essential facts on cylindrical and centerless grinding and provides convenient selection charts. Ask your Norton Distributor for Form 2006. Or write direct for free copy. NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities.

It's easier to
GET MORE UNITS
per dressing • per hour
per wheel

**WITH NORTON O. D.
GRINDING WHEELS**

You want your cylindrical or centerless grinding wheels to deliver exactly the required tolerances and finish... in piece after piece... hour after hour... with a minimum of dressing or replacement.

With Norton wheels it's *easier* to get these results. Here are the reasons:

1. Norton Range of Specifications Covers All Your O. D. Jobs. Whatever your material or job specifications — in the complete line of Norton wheels for O. D. grinding you're sure to find the *one* wheel with the *right* combination of abrasive grain type and bond for top cutting performance and extra long wheel life — and Norton uniformity assures top performance in *every* wheel.

2. Norton Applicational Aid Covers Your Grinding Problems. In practically every case your Norton Distributor can quickly tell you which types of wheels you need. Backing him is the Norton Abrasive Engineer in your area. And behind both is the Norton technical staff, representing the resources and know-how of the world's largest manufacturer of abrasives.

3. Norton Stocks Cover Your Delivery Requirements. Your Norton Distributor keeps ample stocks of popular O. D. wheel types and sizes. Larger stocks are maintained in Norton warehouses in key cities throughout the country, and you can always count on prompt shipments from Norton Company's complete stocks in Worcester.

*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries



*Making better products to make
other products better*

APEX

Bit Holders to fit your guns...



1/4"-24 Screw Shank Drive



Keller 10-32 Screw Shank Drive



Haskins Drive



1/4" Sq. Quick Change Drive



Keller 1/4"-20 Screw Shank Drive



Buckeye-Desoutter 5/8" Hex Drive



3/8", 1/2", 3/4" Shank for Spiral Drivers



Millers Falls Tang Drive



Keller Tang Drive



1/4", 3/8", 1/2", 5/8" Hexagon Drive



Millers Falls Dyno-Mite, 1/4" Hex



Thor 1/2" Sq. Shank Drive

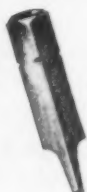
and **APEX Insert Bits** to drive your screws...



PHILLIPS



FREARSON



SLOTTED



CLUTCH HEAD



SOCKET HEAD

will **reduce** your fastening costs...

Apex bit holders and insert bits—an exclusive, patented Apex development—will help you save on tool costs, reduce bit inventories and fastening costs, and conserve vital steel supplies.

Bit holders, made to fit all popular makes of air, electric or spiral drivers, last indefinitely, and the

low-cost insert bits may be quickly and easily replaced when worn. The same insert bits can also be used with Apex hand drivers and service drive bit holders for impact tools.

Catalog 20 lists the complete line of Apex screw-driving tools . . . write, on your company letterhead please, for your copy.

APEX TOOLS

bit holders and insert bits

THE APEX MACHINE & TOOL COMPANY

1034 S. Patterson Blvd., Dayton 2, Ohio

SAFETY FRICTION TAPPING CHUCKS • VERTICAL FLOAT TAPPING CHUCKS • SELF-RELEASING AND ADJUSTABLE STUD SETTERS • POWER BITS FOR PHILLIPS, FREARSON, SLOTTED HEAD, CLUTCH HEAD, HEX HEAD AND SOCKET SCREWS • HAND DRIVERS FOR PHILLIPS, FREARSON AND CLUTCH HEAD SCREWS • AIRCRAFT AND INDUSTRIAL UNIVERSAL JOINTS • SOCKETS AND UNIVERSAL JOINT SOCKET WRENCHES.

Large or small—you can PROTECT FANS and HOUSINGS with

PLIOWELD RUBBER LINING

SMALL OR LARGE, you can apply PLIOWELD lining to most metal surfaces. Goodyear equipment includes 15' diameter X 45' long vulcanizer—capable of handling equipment which can be transported.

7 REASONS WHY

THE G.T.M. SPECIFIES PLIOWELD

- 1 Effectively seals in corrosives that cannot be handled in metal
- 2 Bonds permanently to metal surfaces—an exclusive Goodyear process
- 3 Does not split or loosen with vibration or severe external impacts
- 4 Does not crack or buckle under alternate wetting and drying or under temperature changes
- 5 Surface will not disintegrate or slough off—cannot ever contaminate in-process materials
- 6 Protects product from discoloration, iron "pickup" and other contaminants
- 7 Each installation specially formulated to provide maximum protection against conditions revealed by G.T.M. study

WHEREVER you use an air stream to move corrosive fumes, you can assure yourself of longer, lower-cost service by coating impellers, fan blades, housings and duct work with PLIOWELD.

Every PLIOWELD installation—from smallest to largest—gets individual attention from the G.T.M.—Goodyear Technical Man. You can get his confidential advice on your problems by discussing with him such matters as nature of the fumes, temperature and velocity, the capacity, RPM, HP, etc., of the removal equipment.

Wherever you handle acids, alkalies, salts, or corrosive fumes, it will pay you to consult the G.T.M. about PLIOWELD—developed by Goodyear, a leader in bonding metal to rubber. Ask the G.T.M. about your problem, or write Goodyear, Akron 16, Ohio.

GOOD YEAR

THE GREATEST NAME IN RUBBER

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

Plioweld—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

OCTOBER, 1951

Please mention PURCHASING Magazine when writing to advertisers.

43



Here's a fellow
LOOKING FOR TROUBLE...

...of the laminated plastics variety!

He is the Taylor Sales Engineer.

With his wide experience and thorough knowledge of laminated plastics, and with the complete facilities of the Taylor Fibre Co. at his disposal, he is ready to step in and help you find ways and means to make your product or part *better* with Taylor Laminated Plastics.

By pointing out the plus-values of Taylor *full-line* Service, he can show you how to solve that "tough one" with one or more of the many grades of Taylor Vulcanized Fibre, Phenol Fibre, and Glass Melamine and Silicone Laminates, available in sheets, tubes, rods, coils and strips.

He'll point out, too, how Taylor's completely-equipped Fabricating Service can quickly turn out precision-made parts having the exact physical, electrical, chemical and mechanical characteristics you require.

Whatever your laminated plastics problem, you can be sure of full scale help from the Taylor Sales Engineer. May we have him call? There's no obligation, of course.

Taylor

TAYLOR FIBRE CO.

NORRISTOWN, PENNSYLVANIA

WEST COAST FACTORY: LA VERNE, CALIF.

OFFICES IN PRINCIPAL CITIES



Here is the new Taylor 62-page catalog. It contains specifications and description of Taylor Laminated Plastics. See for yourself how you can make your product or part better with the use of these plus-value materials. Write today for Catalog P10.



**You can't top
the score of
Westinghouse
fluorescent lamps
for bright, long life**



YOU CAN BE SURE...IF IT'S

Westinghouse

You can cut
**ANY MACHINABLE
MATERIAL**

from wood to hard
steel with these
rugged, gang-cutting
hole saws

**40
SIZES**
from $\frac{5}{8}$ "
to $4\frac{1}{2}$ "

Cut big holes
faster and cheaper
with new, high-speed

BLU-MOL[®]

HOLE SAWS

**NEW
FOLLOW-THROUGH
TYPE**

Ideal for stacked
material or
cutting through
partitions

**WRITE FOR
FULL DETAILS**

— or let us arrange for a
demonstration. See for yourself
how these new, ultra high-speed
"Blu-Mol" Hole Saws can save
you time and money on many
maintenance and production
operations.

Millers Falls Company
Greenfield, Mass.

Super high-speed

**WELDED
EDGE**

on extra tough
alloy steel
back

Cut up to
 $1\frac{1}{8}$ "

DEPTH
in solid
material

**MILLERS FALLS
TOOLS**

SINCE
1868

"Blu-Mol" Hole Saws are
part of the world's broadest
and most highly developed
line of metalcutting saws.

The Mark of Superiority

ONCE AGAIN the nation's steel production depends on you!



Scrap iron and steel are vital to the production of steel . . . and America's mills are turning out over 100 million tons of ingot steel annually. That takes a *lot* of scrap!

Yet lack of scrap may cause steel production to *sag* . . . right when our nation needs more steel than ever. And there's only one way to meet the need: Get in *all* the scrap that you can, *now*.

You can help now . . . this way

Check your plant or factory—check the grounds, too. Gather up all the scrap steel—old or obsolete machinery and equipment, rusting tanks and boilers, rails and sheets. Your local scrap dealer will pay you today's good prices and start this vitally needed material on its way.

Production is the key to solution of many national problems . . . and production requires steel. Help keep production high by getting in the scrap!



WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

NATIONAL STEEL



CORPORATION

HOW TO PROTECT A WIZARD'S MAGIC POWERS

The wizardry of electronic accounting is helping production men all over America to meet tremendous production goals. And guarding these miracle-working machines you frequently see a Frigidaire Dehumidifier.

For excessive moisture means problems...it can cause cards to curl and fit improperly in accounting machines—and can corrode electrical contacts. And even though tests are made before each run, a failure is a costly source of lost time.

To solve these problems a Frigidaire Dehumidifier is simply plugged into any standard electric outlet in the room where the machines are operated—to provide a quick and inexpensive way for removing harmful moisture from the air.

Whatever your own plant's air conditioning or refrigeration needs are, you can meet them quickly, and at low cost, with Frigidaire equipment. When the "heat is on"—Frigidaire can help take the heat and humidity off!

So for any refrigeration or air conditioning problem, call your Frigidaire Dealer, Distributor or Factory Branch. Look for the name in Yellow Pages of phone book. Or write Frigidaire Division of General Motors, Dayton 1, Ohio. In Canada, Leaside (Toronto 17), Ontario. And be sure to get Frigidaire's free Refrigeration Security Analysis of your present refrigeration costs and future needs.



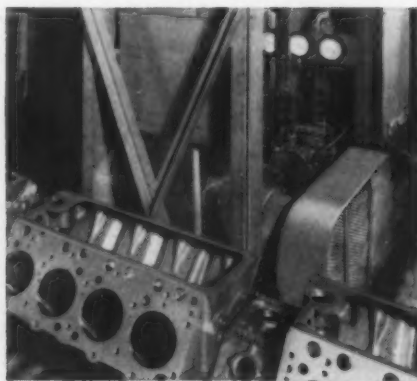
FRIGIDAIRE

Over 400 Refrigeration and Air Conditioning Products for Offices
Laboratories • Processing • Precision Assembly • Storage • Plant
Lunchrooms • Medical Departments • Water and Liquid Cooling

Frigidaire reserves the right to change specifications, or discontinue models, without notice.



In plants everywhere, it is being proved that more and better work can be produced—as in the drafting room above—when employees are kept comfortable with Frigidaire Self-Contained Air Conditioners. These units can be installed quickly and easily without use of ducts or interruption to work schedules.



Multiple cylinder boring and honing is accomplished at high speeds, and with complete accuracy, when a refrigerated coolant fluid bathes the surface being finished. Here a Frigidaire 7½ hp compressor holds coolant at 68° F.—an installation typical of many used in precision machining operations.



In factories and offices, Frigidaire water cooling equipment means increased employee efficiency, good will and good health. Frigidaire's wide range of types and systems includes bottle- and pressure-type coolers, industrial coolers, and tank-type coolers for use with remote compressors.



PRECISION TAP CHAMFERING

NEW, AUTOMATIC, SCIENTIFIC

Chamfer is a mighty important feature of a Tap. Concentricity, angle and length all are vital, —excessive variance in any one of these elements can start trouble that may ruin the Tap or, worse still, the product being tapped.

You can have confidence in "Greenfield" Taps chamfered on these specially designed chamfering machines which are producing chamfers to previously unheard of perfection.

BUY TAPS WITH CONFIDENCE

BUY GREENFIELD TAPS



GREENFIELD TAP AND DIE CORPORATION

GREENFIELD, MASSACHUSETTS



POLISHED FLUTES

POLISHED FLUTES give greater accuracy, better wear, less breakage. And all this with less power consumption. Ground between centers then polished, finely proportioned flutes and concentric webs are assured, chip disposal is facilitated. On deep hole drilling polished flutes are a **MUST**, on average jobs a **PLUS**. Don't be satisfied with less, insist on the best.

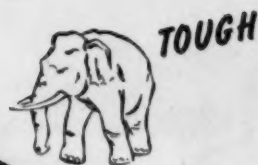


BE SURE BUY GTD-AMPCO

AMPCO TWIST DRILL DIVISION
GREENFIELD TAP AND DIE CORPORATION
GREENFIELD, MASSACHUSETTS



THEY'RE FLEXIBLE



TOUGH

GARLOCK METAL FOIL PACKINGS

GARLOCK Metal Foil Packings are specially designed for service on rods or shafts of equipment operating at high speeds and high temperatures.

They are constructed of thin metal foil spirally wrapped around a fibrous center core. Thus, the durability of metal wearing surfaces is combined with the resiliency of a fibrous packing.

The packings described at the right have a patented, pleated foil construction which makes them remarkably flexible and permits the forming of rings without undue distortion of the material. Also, the many small pockets in the pleats of the foil carry lubricant to the wearing surfaces of the packing. Write for descriptive folder.



THE GARLOCK PACKING COMPANY
PALMYRA, NEW YORK

In Canada: The Garlock Packing Company
of Canada Ltd., Toronto, Ont.



RESILIENT, TOO

COPPER GARLOCK 906—Pleated copper foil with asbestos core for steam, air or gases (except ammonia) and hot oils of low sulphur content, at temperatures up to 1000° F.

ALUMINUM GARLOCK 913—Pleated aluminum foil with asbestos core for hot oils at temperatures up to 1000° F.

LEAD GARLOCK 917—Pleated lead foil with asbestos core for steam, air, oil, water, ammonia or other gases at temperatures up to 550° F.

GARLOCK

PACKINGS, GASKETS
AND OIL SEALS

When you order SPRING STEEL

place your order with —

SPRING STEEL HEADQUARTERS



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One reliable source for all spring steel requirements! As the world's largest distributor, Purdy offers technical assistance in the application of spring steels based on more than 40 years of job-tested experience. When you need spring steel, or expert technical advice, call on Purdy — your Spring Steel Headquarters!

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- BARS OF SILICO SAE 9260 — FLATS
- BARS OF SAE 1095 — RODS, SQUARES, FLATS
- SHEETS SAE 1095
- MUSIC AND SPRING WIRES — OIL TEMPERED WIRES

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Where History is Made..

**THEY USE TRUMBULL PRODUCTS
TO DISTRIBUTE AND CONTROL ELECTRIC POWER**

Speed of installation . . .

Dependability of performance.

These are the reasons why the builders of Oak Ridge . . . like the builders of The United Nations' new headquarters . . . so often used Trumbull products for distributing and controlling electric power.

In the apartment houses and schools, for example, they used Trumbull load centers equipped with automatic circuit breakers. And in the Atomic Energy Commission plants, they used Trumbull switchboards and motor control centers.

MORE NEWS FROM TRUMBULL

Since the building of Oak Ridge, Trumbull has

developed many new products of the same types.

Trumbull's new load center—called Trumbullite—is the first to have plug-in circuit breakers with quick-make, quick-break operation.

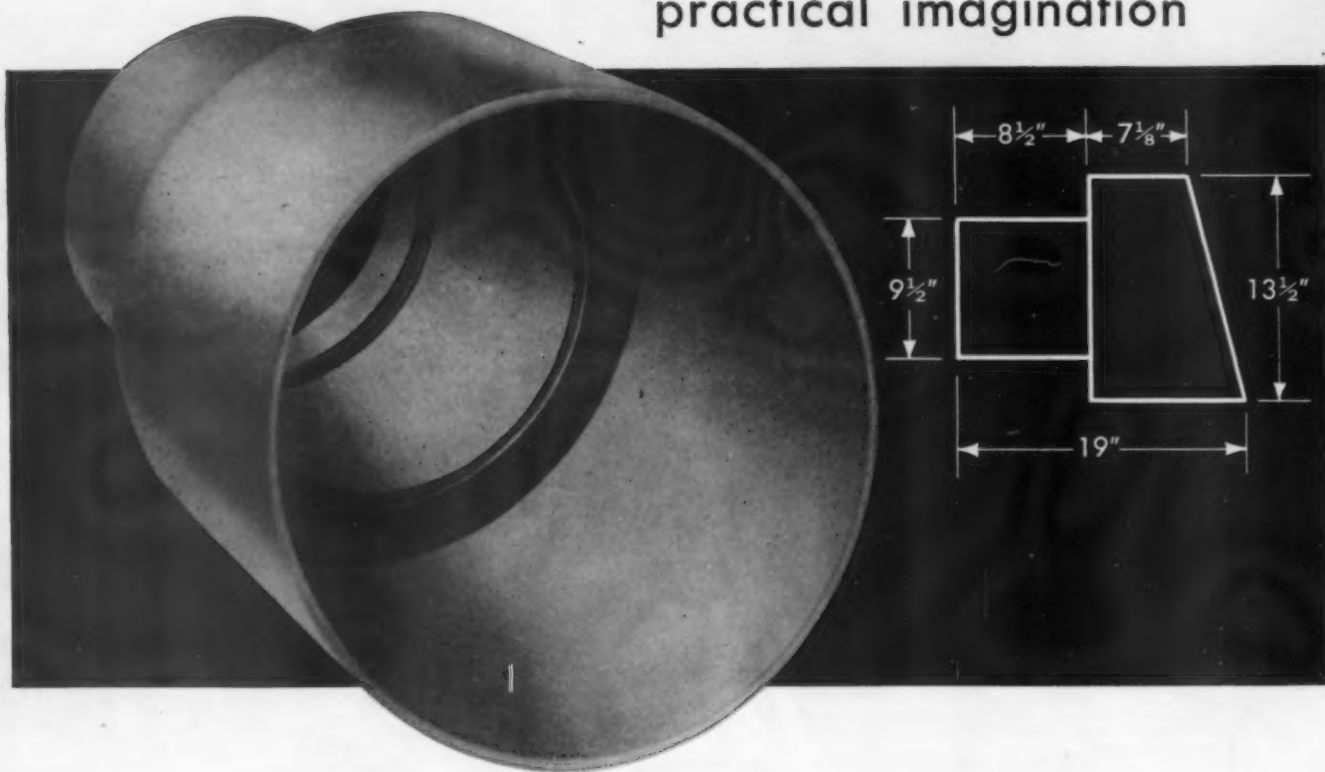
And Trumbull's motor control centers are now in the form of CENTR-A-POWER, in which standardized starter-and-disconnect units are grouped in prefabricated, rigid steel troughs, in any arrangement.

What better testimony to product acceptance . . . than to have it adopted where, for peace or war, the atomic energy plant was built . . . and where, for peace, The United Nations is erecting its permanent headquarters?

TRUMBULL  ELECTRIC

**DEPARTMENT OF GENERAL ELECTRIC COMPANY
PLAINVILLE, CONN.**

practical imagination



"welded" assembly makes large plastic parts practical and economical

Look at this large, laminated plastic part. It is 19" long with two concentric diameters of 13 1/2" and 9 1/2" connected by a flat ring. Think of the cost of molds for making such a piece—and then consider the fact that only a few such parts are required. The cost would be prohibitive.

It is on problems like this that Continental-Diamond's knowledge of plastics and their fabrication pays off for you. C-D engineers took two Dilecto tubes of the required diameters and wall thicknesses and then cut a ring from a sheet of Dilecto to just fit the O.D. of the smaller tube and the I.D. of the larger.

These three parts were then literally "welded" together into a strong, low cost part. The material used to do the "welding" is one of the compounds developed by C-D in their vast experience of fabricating parts of Fibre, Vulcoid, Celoron, Micabond, Dilecto and combinations of all of them.

If you have a problem—or a standard application for plastics, it will pay you to check with your nearest C-D office.



your partner in producing better products

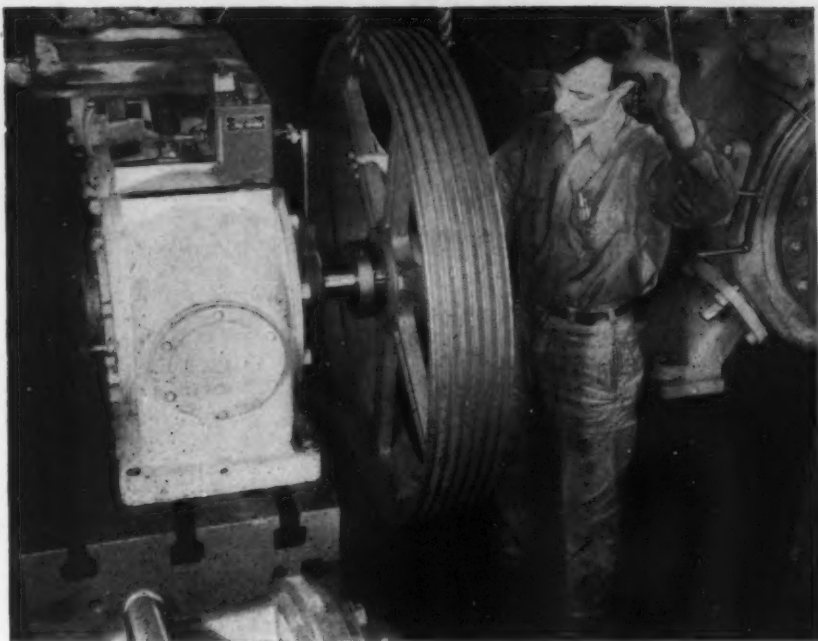
DILECTO (Laminated Thermosetting Plastic)
CELORON (Molded High-Strength Plastic)
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MICABOND (Bonded Mica Splittings)

DE-5-51

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Continental - Diamond FIBRE COMPANY

Established 1895... Manufacturers of Laminated Plastics since 1911—NEWARK 41 • DELAWARE



Pick the V-Belt Sheave *which all industry likes best*



QD

TRADE MARK

Split hub is clamped to shaft. Heavier taper-bored rim slides easily over tapered hub—no keyway obstruction on cone surface. Positive press fit on shaft. Large, long pull-up bolts also used as jack screws to remove rim.

Here's a 26-word description of the V-belt sheave that is used more than any other.*

Two parts for easy handling—separately or together. Split hub and tapered rim make mounting easy. No re-alignment problem—clamped hub stays put while changing rims.

That's Worthington's QD—the original tapered cone-grip sheave that's preferred by men who have to install or change sheaves. The QD is easy to get on, easy to get off, yet always tight on the shaft—tighter than any other sheave on the market. Hubs for every bore—lower inventory cost.

For your machines, pick Worthington Multi-V-Drives with QD sheaves and Worthington-Goodyear EC Cord V-belts. Complete range of stock sizes—prompt shipment from distributors everywhere.

*In addition to being one of the largest-selling sheaves, the popular Worthington QD design is licensed to many other sheave manufacturers. For your protection, dimensions are standardized to permit interchangeability.

WORTHINGTON



THE GOOD RIGHT



HAND OF INDUSTRY

POWER TRANSMISSION:
sheaves, V-belts, variable speed drives

PUMPS:
centrifugal, power, rotary, steam

AIR COMPRESSORS:
water-cooled, air-cooled



The water
failed,

the light
almost failed...



but the distributor
"came through"

A hydro-electric plant, crippled by drought, was threatened with losing its franchise; was given 60 hours to bring its service up. Two Diesel engines were about to arrive when somebody remembered to order the V-belt drives.

A call to Anderson-Crane Rubber Company, Worthington distributor in Minneapolis, located four large D-section QD sheaves and 25 Worthington-Goodyear steel cable V-belts. These were rushed by car at night to the power plant, arriving just ahead of the engines. Within 24 hours, the plant was producing full power.

Once again, the Worthington distributor was on the job—with the needed supplies and the prompt service!

Worthington Pump and Machinery
Corporation
Multi-V-Drive Sales Division
Buffalo, New York

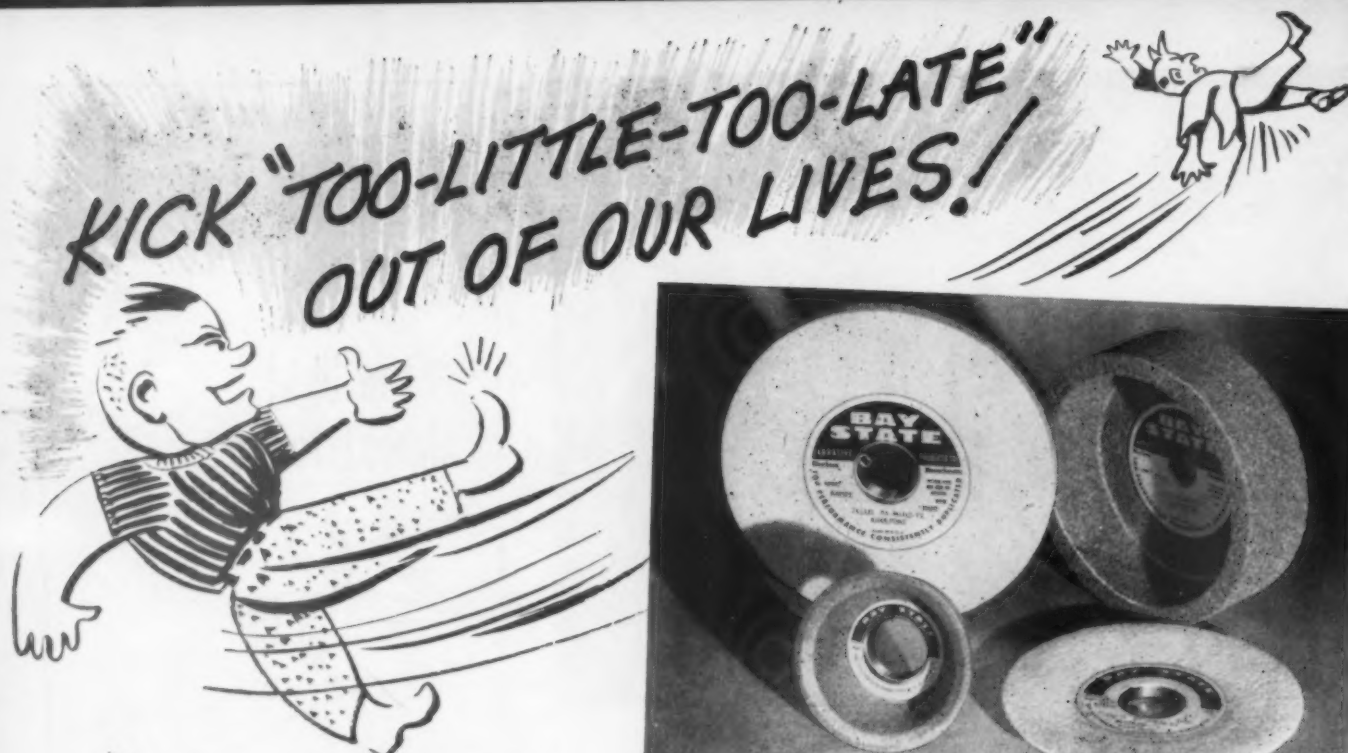
Send Bulletin V-1400-B7F on
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Name

Company

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MV.1.3



Keep your cutting tools in "fighting" condition. BAY STATE tool wheels manufactured with KOOLPORE specifications are ideally suited for sharpening broaches, cutters, reamers, end-mills, taps, hobs, counterbores, etc. They are ideal because of their extra cool, fast-cutting ability . . . a protection from excess heat that can ruin the edges of your valuable, hard-to-get cutting tools.

Ask for BAY STATE "on-the-spot" engineering help on your next abrasive job.



★ THE ABRASIVE PRODUCT BAY STATE Kooldpore Tool Room Grinding Wheels.



PHOTO COURTESY LAPOINTE MACHINE TOOL CO.

★ THE GRINDING JOB BROACH SHARPENING. This type of broach is used in finishing the inside diameter of tank track links.

**BAY
STATE**

BAY STATE ABRASIVE PRODUCTS CO., Westboro, Mass.

Branch Offices and Warehouses — Chicago, Cleveland, Detroit, Pittsburgh
Distributors — All principal Cities

In Canada: Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ontario

★ SECURITY COMES WITH STRENGTH ★

No matter where you sit
—Here...



or Here...



...you'll find it pays to make full use of
NATIONAL service on LEAD PRODUCTS

Front office men or production men... both can take advantage of NATIONAL service whenever lead products enter the picture.

That means lead in any form—straight or alloyed. From rolled sheet to drawn wire. From complex valves to simple piping. From large acid-recovery equipment to a small spool of solder.

Take solder as one example. If you want help in choosing or using solders and fluxes on any metal-joining job, call on NATIONAL. You'll get the benefit of soldering experience gained from working on all sorts of products over a wide

cross-section of industry. Experience you can't find elsewhere.

NATIONAL LEAD is the leader in lead products. Its strategically located plants and warehouses, its unexcelled sources of raw materials, its years of experience... all add up to the kind of service you expect from the leader.

So, for solder—or any other lead product—remember the leader is NATIONAL.

Offices and Plants in Principal Cities;
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Los Angeles; Canada: The Canada Metal
Company, Ltd., Toronto.



Reg. U. S.
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NATIONAL LEAD COMPANY

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Are you buying Belting?
or PRODUCTION POWER!



BOTH!...we use Graton & Knight Engineered Flat Leather Belting

Ques. What is Production-Power?

Ans. Maximum sustained horsepower transmitted to your machines — at correct speeds — economically — with ample reserve for load peaks — and "fluid drive action" to absorb starting torque and load shock.

* * *

The simplest and most economical way to insure Production-Power is with Graton & Knight Leather Belting — *engineered* to provide all of the "live traction" qualities needed. These qualities are: an improved coefficient of friction, with resiliency, flexibility, strength and freedom from permanent stretch. In addition — some belts must have lateral firm-

ness to work on shifter and step-cone drives (HEART OAK). Some must be resilient and flexible with a very high coefficient of friction, to hug small pulleys, make quarter turns, flex both ways, etc. (RESEARCH®). And some must be resistant to the action of heat, steam, water, oil, acid and alkali fumes (SPARTAN®).

G&K Leather Belting is engineered to deliver more production-power in a given set of conditions. It's all a matter of leather quality, and skill and know-how in processing — a good belt every time.

GRATON & KNIGHT COMPANY
Worcester, Massachusetts



YOU CAN DRIVE IT BETTER WITH LEATHER*



Engineered
LEATHER BELTING



All G&K Products are sure-fire!

I've found that I can keep everybody happy when I buy Graton & Knight products... it pays all around.

Orange® Line Textile Leathers Boost Output, Save Money



My looms have shown savings ever since I've used Orange Line leathers from Graton & Knight and its affiliate Dixie Leather Corporation. They cut shuttle cost, stop kinky filling and reduce down-time.



I count on their Leather and Synthetic packings

I know I'll get what I want from Graton & Knight and its affiliate International Packings Corporation. They make U's, Vees, Cups, Flanges, Oil Seals and Special Shapes, in leather and synthetic rubber — as well as synthetic O-Rings.



IT'S

NATIONAL ELECTRIC

ALL THE WAY!



XDUCT JUNIOR—for stronger, better, more uniform installations. It's electro-galvanized under exacting control that produces a uniform, unbroken zinc coating. The inside is protected by a complete covering of clear enamel that will not crack or break. ($\frac{1}{2}$ " and $\frac{3}{4}$ " sizes.) Fishes and bends easily. Permanently protects against abrasion, moisture, corrosion.



E.M.T. FITTINGS—a screwdriver is all you need to install these simplified one-piece, pressed-steel connectors and couplings. ($\frac{1}{2}$ " and $\frac{3}{4}$ " sizes.) Steel overlap at screw increases pressure—assures close, accurate fit—makes NE fittings vibration-proof! Safer . . . Stronger . . . Easy to install in close quarters.

*When the job calls for EMT
it pays to go
ALL THE WAY with NE!*

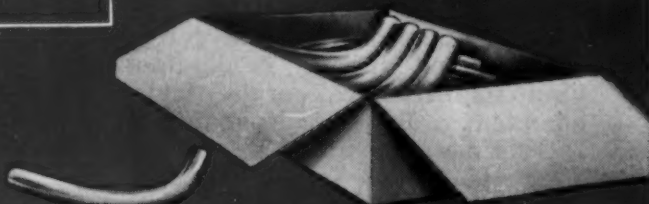
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EVERYTHING IN WIRING POINTS TO



**National Electric
PRODUCTS CORPORATION**

1351 CHAMBER OF COMMERCE BLDG.
PITTSBURGH 19, PA.



XDUCT JUNIOR ELBOWS—Now—National Electric Elbows for E.M.T. come packed in strong, well labeled boxes for easy handling. Electro-galvanized under the same exacting control as XDUCT JUNIOR Conduit. Both 90° and 45° elbows are available in 1" to 2" sizes. Accurately made for easy fishing.



Radarmen Count on
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Indication of position...

Added Evidence
that —

Everyone Can Count on VEEDER-ROOT



LONG-RANGE EYES are what you really have here, in these Veeder-Root High-Speed Yardage Counters. And anything else you need in the way of *Countrol*, you can get in standard or special Veeder-Root Counters, mechanically or electrically operated . . . deliveries depending on D-O ratings, of course.

Just get in touch with the world's largest manufacturers of counting and computing devices. . . .

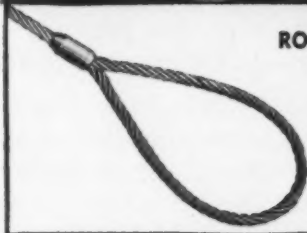
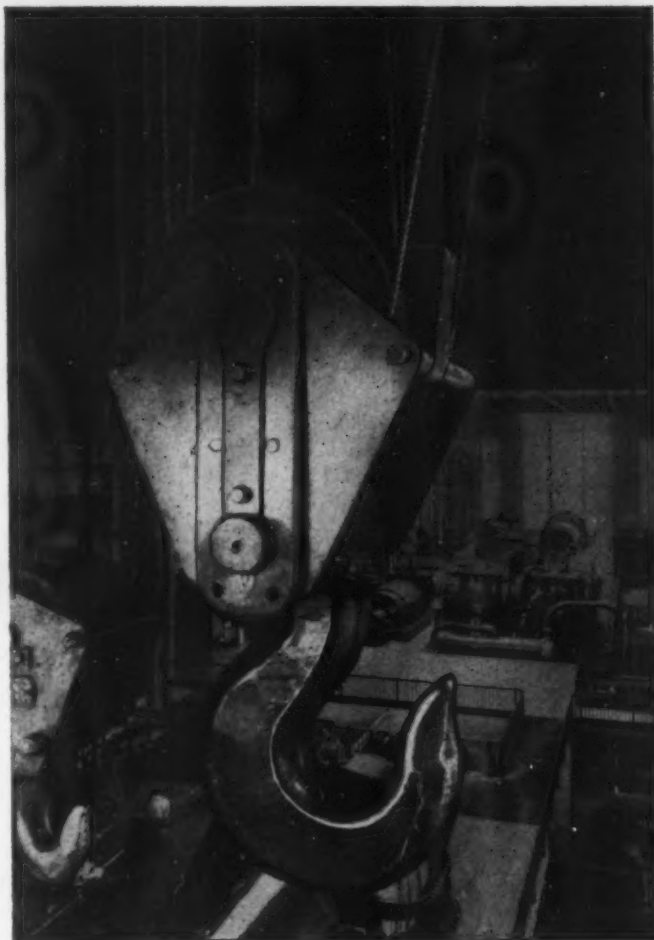
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COUNTERS

"Count Everything on Earth"

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ROEBLING ALL-PURPOSE SLINGS
with the Tapered Sleeve Splice
come to you ready for the job.
They cost less than tucked
splices... have the full
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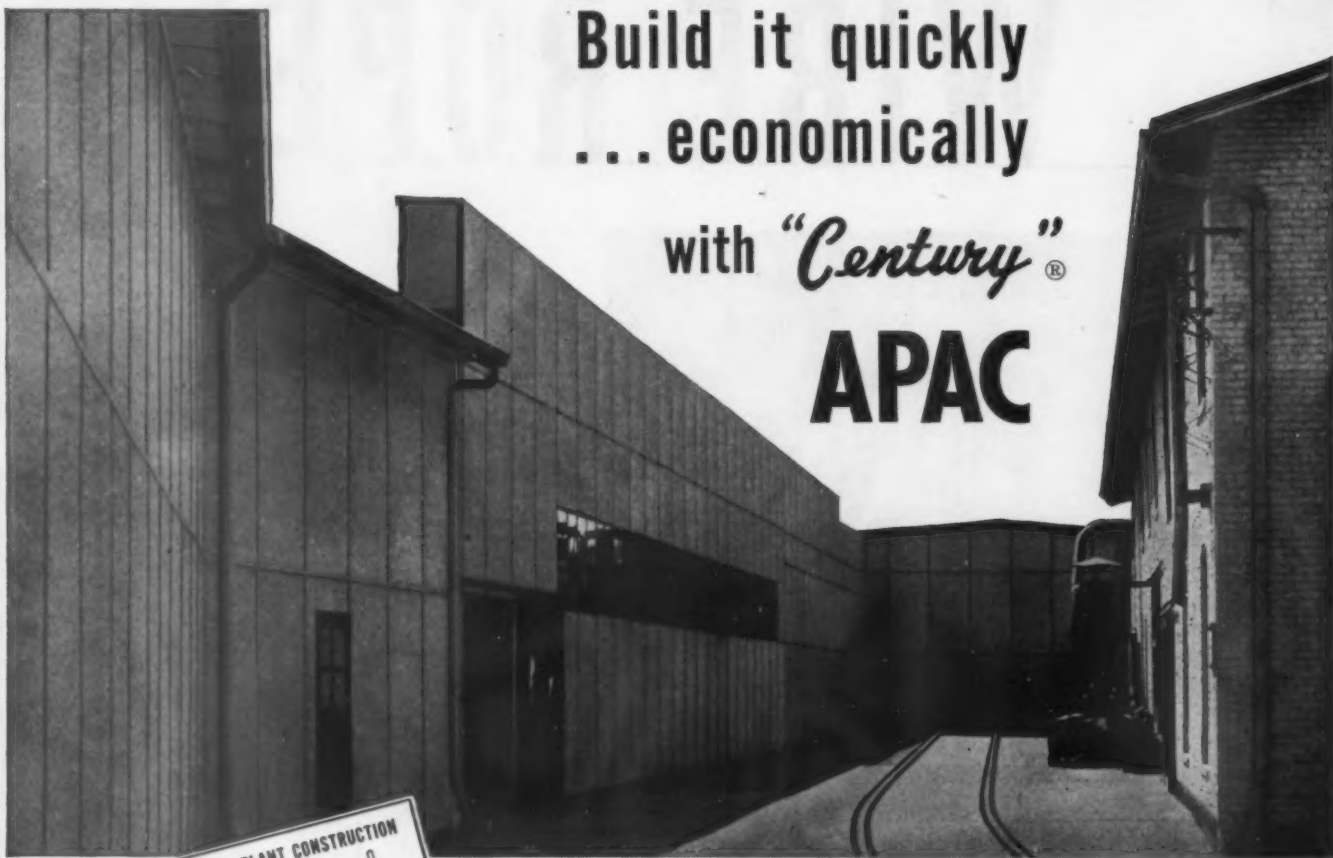
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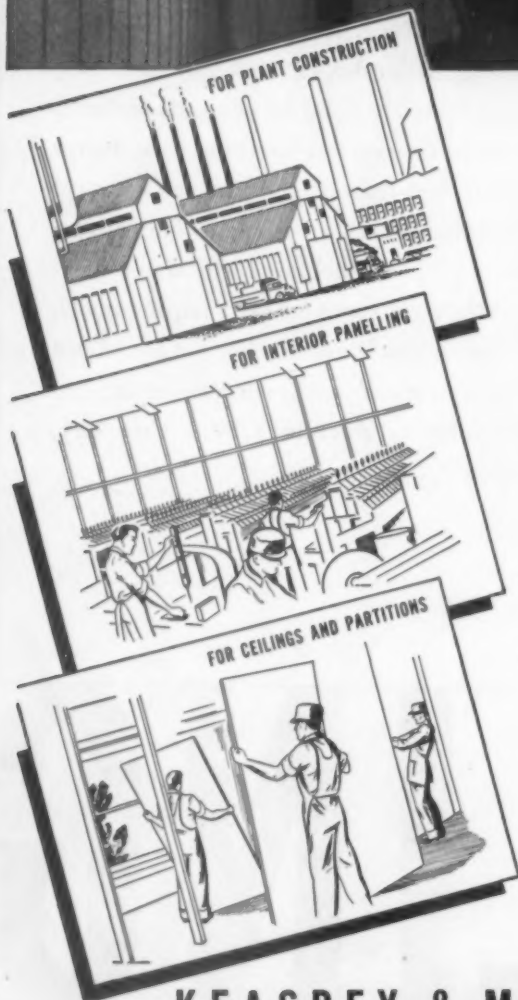
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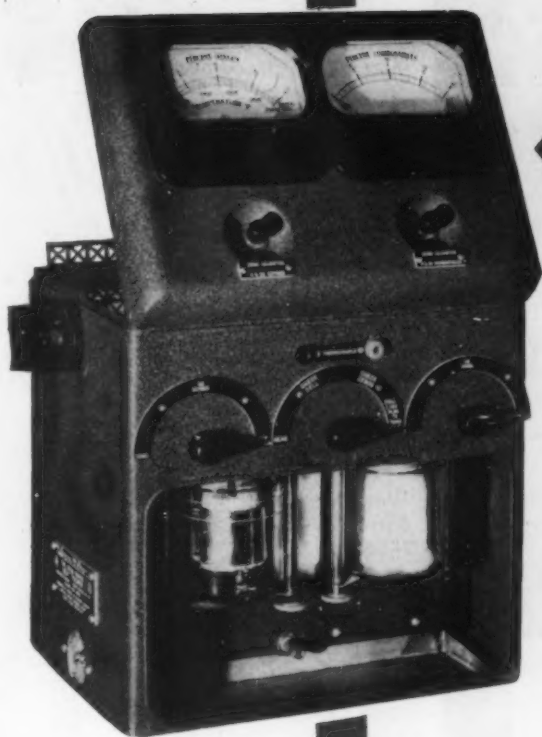
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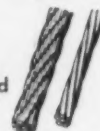
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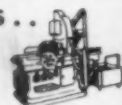
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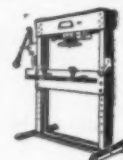
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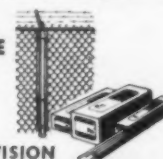
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THE SHAPE OF THINGS TO COME

ANNUALLY, the meetings of the American Chemical Society, bringing together thousands of the test tube fraternity to compare notes and take a look into the future, provides one of the most dramatic and significant highlights of the business year. For the modern chemical laboratory is no ivory tower of theory; it is a very practical workshop, shaping the world of the future in many phases, physical, social, and economic — health, nutritional habits and resources, soil fertility, water supply, power sources and efficiency, industrial materials and processes.

Purchasing agents, concerned with materials for today and for tomorrow's expanding and changing needs, will do well to pay careful attention to the scientists. Each year they announce hundreds of new products and compounds that find their way into purchase requirement lists. And while many of their long-range objectives look to A.D. 2000 and beyond for full fruition, when most of us hope to be retired from active purchasing problems, the trends are important and there is much of more immediate import. Heat treating of plastics, for example; name the properties you need, and they are confident of coming up with the answer.

Modern chemistry is a hopeful science, pitting man's ingenuity and capacity for understanding and utilizing the process of nature to combat the dreary science of economics. Worried about depletion of oil and mineral reserves? The laboratory man expects to beat those threatened shortages with materials that are better and cheaper, rendering both present fears and present reliances obsolete. In the picture of the future, agriculture becomes predominantly a producer of raw materials, and the so-called extractive industries are envisioned as chemical processing. Fantastic? Remember how chemistry has moved into the petroleum industry in the past twenty years, and what it has accomplished in greater yield, better product, and useful by-products.

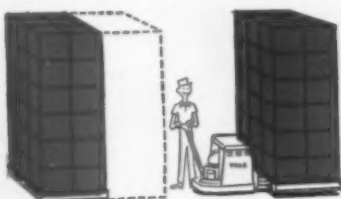
Notable in last month's meeting was the shift from recent emphasis on atomic development. That is still highly important, in more ways than one. But today, the chemists are looking forward, within this century, to harnessing the inexhaustible resources of solar energy as a primary source of heat and power, and to exploiting the inexhaustible seas as a mine. What that could mean in establishing economic parity among the nations and eliminating the basic causes of world conflict challenges the imagination.

Stuart F. Henrity

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SAVE SPACE!

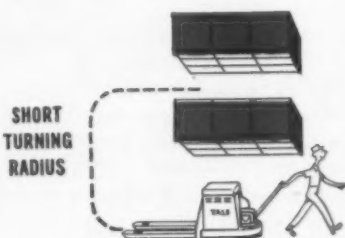
Thousands of square feet of it in aisles alone! Yale's Worksaver needs less room to work in so you gain valuable extra space for storage and production.*



*Consider this saving before building new facilities.

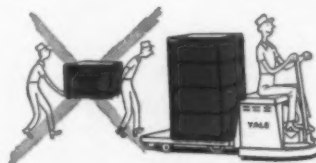
SAVE TIME!

You can quickly work heavy loads with this shorter, lighter, more maneuverable Worksaver, cut costs on jobs bigger trucks can't get at.



SAVE MANPOWER!

One man at the steering handle can free an entire gang from the "sweat, strain and sprain" of heavy hand lifting.



"WALK IT OR RIDE IT!"

Eliminate waste on hard-to-get-at jobs with these **YALE WORKSAVERS**

SAVE SAVE SAVE—that's the story of YALE'S Stubby Worksaver!

These pallet or platform trucks squeeze into small spaces to do big moving and lifting jobs...open up whole new areas of your plant to faster, more efficient materials handling...*cut your time and labor costs as much as 75%!*

The Yale Worksaver is a rugged trouble-free truck, too! A powerful electric drive unit, hydraulic lift and welded steel frame keep it on the job for years with a minimum of servicing.

Here's another YALE "expert" at cutting your costs

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Highlights

This issue's important features summarized for the busy reader



Controls are getting tighter on materials as the defense program progresses from the tooling-up stage into actual production. For an up-to-date report on the **Status of Allocations**—where materials are going and what you may expect in the months ahead, our Washington editor has reviewed this situation for you in an informative article on page 71. Don't be lulled by false hopes or place reliance on vague generalizations. Now is the time to adjust purchasing and operating programs to a realistic assessment of available supplies in a market where the official allocations themselves already show a deficit of materials.

Raw materials are not only a problem for the individual buyer, but for the over-all national economy as well. In world markets dominated by international credits and trade agreements, economic sanctions, and **Government to Government** purchase and sales transactions, United States has hesitated to establish an official ministry of supply. But a new procurement agency has now been created. Objective: a world-wide quest for the scarce materials essential to our economy. Turn to page 114 for an account of how it will operate.

Subcontracting of defense contracts made headlines with the recent announcement that General Motors, the top producer of war materials, is seeking some 7,000 additional sources of supply on current and anticipated defense business. Our Detroit representative went to headquarters for information on this program and how it will be handled purchase-wise. His interview is reported on page 77.



Purchasing agents throughout the country are involved in **Plant Construction** contracts, a phase of procurement work that has many problems peculiarly its own. In an earlier article (December 1950, p. 87) E. S. Page outlined the procedural steps in developing such contracts. Following up on this subject, he presents a check-list analysis of contractors' cost items entering into such projects, detailing the complex operations in a form to enable the buyer to control and audit legitimate expenditures under the contract. Turn to page 97.

Two simple and effective **Control Forms** are described in this issue, that could be adapted to aid in meeting your own system's requirements for today's purchasing problems. One of these (page 84) is a single form for analyzing, authorizing, and setting up the appropriation for new facilities. The other (page 93) is a graphic stock control record, particularly important in these days of shortages and uncertain deliveries. For more forms, turn also to the Office Equipment Section.

This month's **Guest Editorial** (page 69) is contributed by H. W. Christensen of Columbia Steel Company, one of the leaders among West Coast purchasing executives, who has recently been called back into harness to serve a second term—after a lapse of several years—as Vice President of the N.A.P.A. for District No. 1. In the span of his career in purchasing work, Mr. Christensen has seen the purchasing function develop steadily in management stature, a development to which he has contributed in no small measure. This is the theme of his message, "Purchasing and Management Move Forward Together."

A great many thoughtful people have expressed concern over the apparent deterioration of **Ethical Standards** in our national life at the personal, public, and business levels. It's a touchy subject, but one of vital importance, and one to which purchasing agents are exposed daily at first hand in their business dealings. We have asked them to comment on the situation in this month's survey of purchasing opinion. For their comments, turn to page 75.



Modern purchasing takes to the **Air Lanes** with the increased tempo of today's purchasing responsibilities. A metropolitan purchasing executive has found it possible to do three days' inspection and contact work in three hours by using a helicopter to cover the 25-mile radius from his rooftop heliport, saving 54 minutes per one-way trip to the outlying operations stations of his organization, avoiding the traffic delays of conventional surface transportation over congested city streets. One of our editors accompanied him on a recent tour of the properties, and has recorded his observations in picture and text in the article on page 82.

Another picture story, on page 112, graphically portrays the services made available to the purchasing agent by the **National Freight Forwarder**. Do small shipments and complicated routings cause trouble in your delivery schedules? Would a single responsibility for shipments from point of shipment to destination ease your burden? Then you will want to get acquainted with this competent and useful ally to the buyer.

Are you making full use of these monthly departmental features compiled especially for the purchasing agent? The **Washington Previews** (page 13) keep you informed on current developments in governmental policy. Another section is devoted to **Office Equipment and Forms** (page 177). Informative **Trade Bulletins and Catalogs** listed on page 19 are yours for the asking. **New Products and Ideas** are reported on page 128. Keep abreast of **Association Activities** (page 210) and what **Men in Purchasing** are doing (page 288).

How to Help Stretch the Steel Supply

1. Tell Us All!

You'll be helping to make the most of available steel if you give your supplier full information when ordering. For instance, by giving us your length multiple—the cut length you will actually use, you may enable us to fill your order in "shorts." Moreover, when we know your multiple, it may be possible to ship pieces that will cut with minimum waste, thus reducing your scrap loss. Whenever possible, also give alternate gauges, sizes and qualities that may be used when your exact requirement is not available.

2. Make It Last!

Because breakdowns may necessitate replacements not readily available under present conditions, extra care of machinery is essential. With only a little more than routine maintenance, such as proper painting and lubricating, the useful life of plant property and equipment may be prolonged.

3. Turn in Your Scrap!

To keep record steel production rolling the mills must be fed a constant flow of scrap. For every ton of steel produced, at least a half-ton of iron and steel scrap is needed. Now is the time to comb your plant for old, worn-out, or outmoded machinery and equipment—anything that constitutes "heavy melting" scrap—and turn it back into channels of use. Your Ryerson representatives will

gladly advise you on how best to sell your scrap quickly and profitably.

Our organization is constantly on the watch for ways to make more steel available to our customers. While our stocks are currently out of balance from a size standpoint, we do have a large tonnage of carbon, stainless and alloy steels on hand for quick shipment. So call us when you need steel, and we will work closely with you.



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Purchasing and Management Move Forward Together

● **By H. W. Christensen**

W. H. CHRISTENSEN is Director of Purchases for Columbia Steel Company, West Coast subsidiary of the United States Steel Corporation, and is currently serving as Vice President of the National Association of Purchasing Agents for District No. 1.

Mr. Christensen is a native of Brooklyn, New York. Following four years of service in the Mexican Border campaign and in France during World War I, where he held the rank of Captain in the Field Artillery, he began his industrial career in 1920 in the purchasing department of the old Llewellyn Iron Works of Los Angeles and Torrance, California, and subsequently became General Purchasing Agent of that company.

In 1929, the Llewellyn Iron Works, Baker Iron Works, Union Iron Works, and the Gallagher Company were merged into Consolidated Steel Corporation. Mr. Christensen was named Manager of Purchases and Assistant Secretary of the new corporation. He retained that position until 1933, when he became associated with Columbia Steel Company as Manager of Rolled Steel Products for the Southern California Sales Division. His advancement in sales work was as notable as in purchasing. By 1938, he was Assistant Manager of Sales, in charge of service for the Southern Division. The following year he was appointed to his present position as Director of Purchases, with offices at Columbia's headquarters in San Francisco.

He has been actively and prominently identified with Association activities throughout his career in purchasing. He served as President of the Los Angeles Association while with Llewellyn, and in 1927 was District Vice President on the NAPA Executive Committee which firmly established the national and professional character of the Association and laid the sound foundation for subsequent development and progress by securing the services of George Renard as Executive Secretary. On his return to purchasing work in 1939, he became affiliated with the Northern California Association, served as its President last year, and was a popular choice to represent the West Coast Associations on the National Executive Committee for 1951-1952. His record is unique in Association history, in being selected for high national office from two different local groups and over such a wide span of years.

A pioneer and leader in the educational program, he has appeared as guest lecturer on industrial purchasing subjects at leading West Coast educational institutions, including the University of Southern California School of Commerce; University of California School of Business Administration (both at Berkeley and Los



THE purchasing function, as we all know, has not always been accorded the recognition which it enjoys today. In the early days, many businesses were the length and shadow of one man, and frequently disappeared with the death of the founder. Then came the modern corporation, and the life expectancy of the company was extended indefinitely. Management and industrial organization planning came into existence.

In the early days, the founder or the owner of the business did all of the purchasing himself or sometimes delegated it to a foreman in the

Angeles); Stanford University; and the Golden Gate College, San Francisco.

He has served on several occasions in an advisory capacity to the Government. At the present time he is Chairman of the West Coast Procurement Advisory Committee of the National Security Industrial Association; Chairman of the Purchasing Advisory Council to the Municipal Government Survey Advisory Committee, City and County of San Francisco; and a member of the Industrial Advisory Committee of the Iron and Steel Scrap Division, National Production Authority.

Mr. Christensen is a Past Commander of San Marino Post 239, American Legion; Honorary Commander for Life of the Broken Spur Patrol; member of the Jonathan Club, Los Angeles; and the Stock Exchange Club, San Francisco; World Affairs Council of Northern California; San Francisco Chamber of Commerce; and the American Iron and Steel Institute.

His chief hobby is horsemanship, and he has garnered an impressive collection of ribbons and trophies riding hunters and jumpers in competition. He organized and trained the first Mounted Patrol in the American Legion, and participated in training the crack Los Angeles Mounted Police Exhibition Drill Team. In recent years he has frequently been called upon to judge equestrian events and horse shows, including the American Olympic tryouts. He is considered an authority on hunters and jumpers.

The Christensens have a son and a daughter. Captain Douglas H. Christensen, a pilot in the regular U. S. Air Force, flew several months on the Berlin Air Lift and is currently stationed at Kirtland Air Force Base, New Mexico. Daughter Jean Christensen is in retail merchandising in Honolulu.

shop. These men were "general practitioners" often overloaded with work. Buying under this type of organization was performed without knowledge of market trends, price records, supply sources, or proper consideration of the important factors which must be evaluated before reaching an intelligent buying decision. Hidden potential profits slipped "down the rat hole" every day.

This occurs even today in some companies that still take the attitude that purchasing is primarily a service function, merely implementing production. If purchasing is conceived as a routine function and is staffed accordingly, then we usually find slipshod, haphazard buying practices. Management must then take the responsibility for closing the door on many substantial profit possibilities arising from proficient purchasing practices.

As a contrast to these outmoded buying practices, it is indeed wholesome and refreshing to read the statements in the June issue of **PURCHASING**, made by fourteen of this country's outstanding industrialists, giving their views on the reasons why the purchasing function belongs at the top management level. There is a definite consciousness of the importance of purchasing, and its status as a primary function of management is implied in their expressions. Advanced management demands men of competence, thorough training, and executive characteristics to head up the purchasing function. They want men who do their thinking as well as their talking at the top management level.

The significant rise in the stature and scope of industrial purchasing in the past decade has been due, I believe, to the fact that top management itself has changed in function, in requirements and in qualifications. Management today is a science. The day is past for industrial totalitarianism and autocratic management. Not so many years ago, the chief executive officer was responsible only for making money for the company. Later, he had to take into account the interests of labor and of the customers, still, of course, making a profit for the stockholders. Today the chief executive of a company is a trustee for the owners, workers, customers, and the whole fabric of society. He must surround himself with a staff of men of integrity and ability, each a specialist in his particular field. It is the pooled judgment of these ex-

perts that enables him to achieve the overall company objectives. Purchasing, along with engineering, production, sales, accounting, industrial relations, are all part of this management team, contributing to profitable company operation—each with the same number of stripes on their executive sleeves.

The old time purchasing agent of negligible authority and limited business training is rapidly disappearing. We see this happening every day. The scope of the purchasing function in modern business is very often limited—or increased—by the scope of a man's thinking. If the chief purchasing officer possesses a broad economic background, interpretive ability, an awareness of the forces of supply and demand, and his judgment is mature, then often the scope of his responsibilities expands to his own mental calibre. This is frequently reflected in the title of his position—he becomes Vice President in charge of Purchases. We see this happening every day, too.

Progressive management, more and more, will demand men of executive calibre to direct the company's purchasing activity. Burleigh Gardner reports research which indicates the identifying characteristics of successful and unsuccessful execu-

tives, in the September, 1948, issue of *Advanced Management*. May I quote here the characteristics of the successful ones:

1. He has achievement desires. He gets pleasure from accomplishment.
2. Authority does not hamper him. It neither makes him dictatorial nor submissive. He recognizes the merit of group work.
3. He has strong drives, but they are aimed toward achievement.
4. He can organize things well.
5. He is decisive, not necessarily giving rapid-fire answers, but he can make decisions among several courses of action.
6. He has firmness of conviction, is not influenced by pressure.
7. He is aggressive and mentally alert.
8. He has a fear of failure.
9. He is realistic.
10. His relations with others are good.

In my humble opinion, every man who considers himself a Purchasing Executive must possess all of these characteristics if he is to be successful. What are we actually? (The successful executive must be realistic.) This calls for self-examination, soul searching, and self-appraisal of the severest type. Let's look in the mirror!



"The nerve of that guy—asking for delivery by 1953!"

Your Share of Controlled Materials

By A. N. Weckslar

DURING the World War II period, it took three and a half years of evolution in materials control to develop the Controlled Materials Plan. In the current mobilization program, the first direct materials control action, the M-1 order directing steel producers to set aside a percentage of their steel output for defense, was issued in October 1950 . . . in less than a year, the present version of CMP was initiated, and now applies to all industry.

In effect, there has been a telescoping of three and a half years of World War II control action into less than 12 months. Furthermore the number of manufacturers now affected is much larger than during World War II, and the range of products under control is infinitely greater, as the present controls apply not only to defense production but to virtually all civilian consumers of metal.

New Factors in Program

The justification for the haste in applying complete controls does not lie in a greater degree of emergency as compared with the World War II period; rather it represents a basic difference between the current mobilization program and the program projected in 1940 through 1942.

The World War II program was based on building up defense industry, and whenever shortages in materials appeared, civilian industry was either cut back or completely prohibited in order to make the materials available for defense production. There was no programmed large expansion in basic industry,



FIRST THINGS FIRST

Manly Fleischmann, Administrator of DPA and NPA: "We will stick to the proposition that what this is all about is to get the military job done . . . When it comes to a question of whether to use aluminum for airplanes or to build a courthouse, it is the airplane that is going to be built."

transportation, electric power. When shortages developed, there was a frenzied effort to curtail non-essential consumers and cover the shortage as quickly as possible. As a result of this system, priorities, super-priorities, and directives became the common coin of Government action.

In contrast, the current program calls for expansion of steel-making capacity by 20%, and aluminum output by 90%. Electric generating capacity is being increased very sub-



SIMPLIFIED PRACTICE

Walter C. Skuce, who had a major part in planning CMP Controls for NPA: "CMP Regulation 1 includes the context of five regulations issued during World War II when CMP was used before . . . and CMP Regulation 1 consists of merely nine pages this time."

stantially. New freight cars are being added to the nation's rolling stock at a record rate. The exploration of petroleum is being maintained at an increasing pace, and petroleum refining capacity is being enlarged. The plant expansion program affects all segments of essential production and processing of metals, minerals, and chemicals.

While actual military use of steel is roughly 10% of available supply, the programs which are corollary

SIXTEEN WAYS IN WHICH CMP HELPS SMALL QUANTITY PURCHASERS

1. Authorizations under CMP give users, irrespective of size, the right to issue authorized controlled material orders and to use priority assistance that gives the small user as important a purchasing position on mill or supplier schedules as the large user.
2. Small order provisions have been made to assist small users by eliminating the necessity of filing applications. These small order provisions give them the right to place authorized controlled material orders and to use priority assistance in the procurement of other materials and components.
3. The small order provisions for small users have been extended to cover the Consumer Durable Goods manufacturers as well as small B Product producers who get self-authorization under CMP.
4. CMP Regulation 5 provides priority assistance and the right to place ACM orders for maintenance, repair and operating supplies.
5. CMP Regulation 7 provides priority assistance for more than 30,000 repair shops, many of which are small users.
6. Small users beyond the quantitative limits permitting self-authorization are being decentralized for field operation in the 4th quarter, and advance allotments will be given for 3 advance quarters, eliminating the need for such producers to file quarterly or come to Washington in connection with their CMP operations.
7. In the 3rd quarter processing of CMP cases in Washington, more liberal treatment was given to small users than to larger ones.
8. In CMP Regulation 6 governing construction, self-certification provisions are provided to cover contractors using small quantities of controlled materials.
9. Compliance investigation is being instituted on all large CMP cases to be sure that manufacturers with large authorizations stay within the quantitative limitations required in conformity with CMP regulations.
10. Prime consumers have responsibility for passing purchasing authority to secondary consumers.
11. "M" orders supporting CMP give small users equal opportunity.
12. Warehouse directives help small users.
13. "Death sentence" has been removed from small new businesses manufacturing consumer items.
14. Generous treatment is given to component producers.
15. CMP regulations issued in this emergency have been considerably simplified over those used during World War II, permitting greater ease of comprehension on the part of small companies, assisting them to live within the regulations and to determine the authority extended to them governing their operations.
16. A nationwide program of meetings has been carried on by the NPA staff, with the assistance of the Department of Defense, to acquaint people in all industrial areas of the country with the operation of CMP, and to answer questions of both large and small manufacturers.

to mobilization account for about 50% more of the available steel supply.

The Control Pattern

These figures are highly significant to the purchasing agent, as in them lies the best clue as to the outlook for materials during the period ahead—also an indication of what is likely to develop in the controls picture.

The pattern of the Controlled Materials Plan is similar in policy and operation to that of World War II. As they were then, the controls are applied to steel, copper and aluminum—to steel, because steel is a common denominator of all industry; to copper, because of its essentiality to all electrical usage; and to aluminum because of the primary importance of this metal to the aviation industry, and the increased importance of light metals to industry in general.

In controlling these three metals, the Government assumes that the natural trend in industry has been to pace the supply of all other materials to the use of steel, copper and aluminum.

On the assumption, however, that the mobilization program is not accelerated due to widespread war, or slowed down as a matter of Government policy, certain factors will come into play. Although the military now takes roughly 10% of available steel and the supporting programs take an additional heavy tonnage, there should be sufficient steel for both defense and all other requirements when the industrial expansion adds to the steel-making capacity and the supporting programs have been met.

This same yardstick cannot be applied to copper, as there is no prospect for materially increasing the amount available. However, the expansion of aluminum productive capacity by 90% means that aluminum will be available in sufficient quantity to make up the deficits in copper.

Balance by 1952?

From this reasoning, it would appear that the Controlled Materials Plan—blossoming quickly because of the difference in basic mobilization policy between World War II and the present—may become unnecessary before another 12 months pass.

A 20% increase in steel production capacity—a substantial portion of which will become productive next year—plus a stoppage in the

drain on steel supplies as the plant expansion program reaches completion stages, will mean an adequate, if not plentiful supply for both military and civilian consumer needs.

If the added supplies of aluminum compensate for the deficit in copper, these two metals will cease to be in short supply.

NPA officials concerned with administering the Controlled Materials Plan agree with the foregoing estimate of what is likely to develop in the period ahead. They warn, however, that bringing steel, copper and aluminum into adequate supply may mean an even heavier requirement for alloying materials, nickel, lead, zinc, columbium, tantalum, tin and sulphur. The expanded industrial capacity will lead to a greater consumption of fuel, power and the other materials that go into balancing out the supply of steel, copper and aluminum.

The outlook therefore is for a continuation of controls beyond the period that may see the end of CMP as it applies to the distribution of steel, copper and aluminum.

Long-Range Outlook

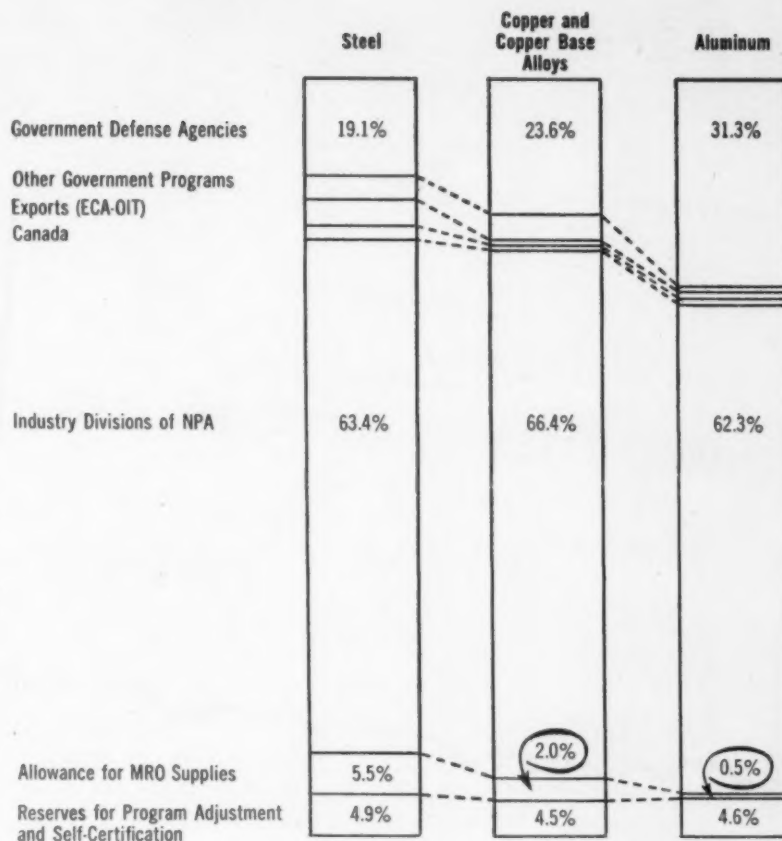
The type of controls in prospect over the long run is likely to be in the nature of limitations on the use of such scarce materials as nickel and columbium — either outright bans on use for non-essential products or limiting their use to working parts.

The question naturally arises as to how Government officials concerned with administering materials controls will know when to start slackening off. There is a natural suspicion that Government bureaucracy will tend to continue controls much beyond the period justified by actual shortages.

In the opinion of National Production Authority officials, the actual operation of the Controlled Materials Plan offers a guarantee that the controls will not be continued beyond the time of actual need.

Under CMP, there is a strong competition between the various segments of the economy for the materials to be allotted. Each industry is interested in how much material will be allotted to it, and there is a similar interest in the amount which other users will get. If the railroad industry gets a disproportionate share of steel, the over-the-highway truck industry becomes highly critical. If the military services carve out too large a slice and it creates a wave of unemployment in areas where there is little

FOURTH QUARTER CMP ALLOTMENTS

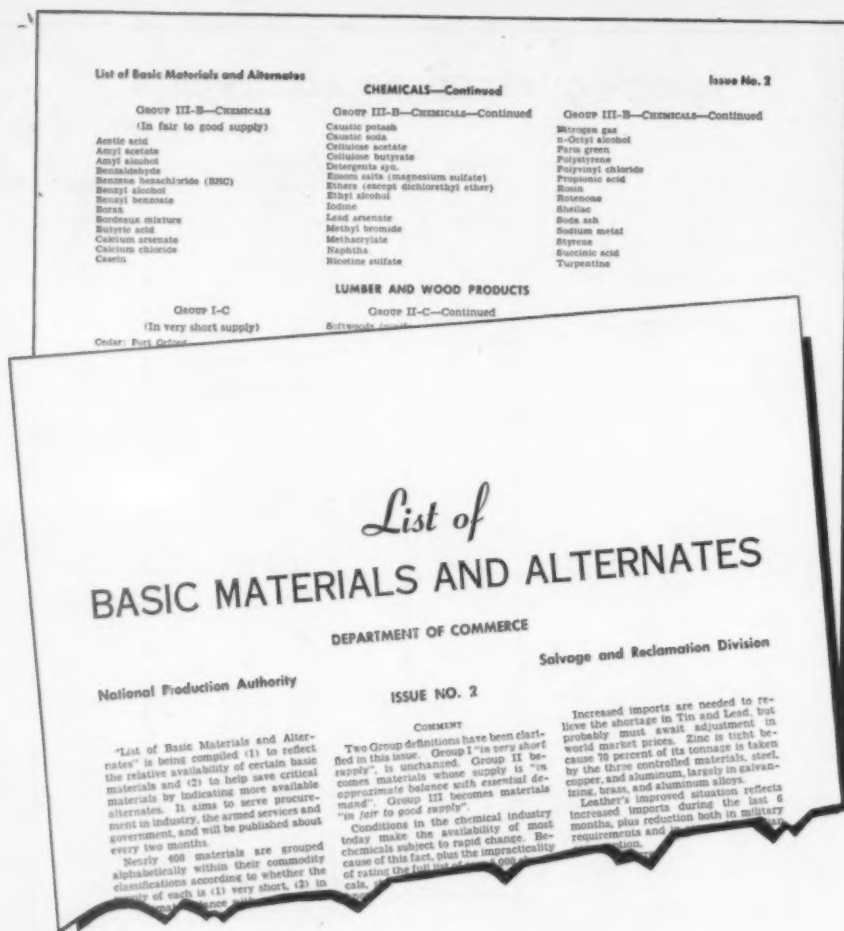


	Steel (tons)	Copper and Copper Base Alloys (000 lbs.)	Aluminum (000 lbs.)
Estimated Supply	21,336,000	1,166,000	598,000
Total Allotments ¹	24,058,520	1,325,941	681,485
Estimated Deficit	2,722,520	159,941	83,475

¹To help balance the deficit in supply, and to make unforeseen adjustments that might be required in the fourth quarter, a reserve of 5% of supplies is being withheld from the tonnage allotments as announced.

BIGGEST ALLOTMENTS TO INDUSTRY DIVISIONS (Percent of Total)

STEEL		COPPER		ALUMINUM	
Motor Vehicle	14.4%	General Components	11.3%	Motor Vehicle	13.5%
Railroad Equipment	7.8	Electrical Equipment	11.2	Consumer Durable Goods	8.4
Containers and Packaging	6.7	Motor Vehicle	11.1	Building Materials	7.3
General Components	4.4	Railroad Equipment	4.9	Iron and Steel	4.2
Building Materials	4.2	General Industrial Eqt.	4.6	Electrical Equipment	3.9
Consumer Durable Goods	3.6	Communications Equipment	4.0	General Industrial Eqt.	3.7
General Industrial Eqt.	3.6	Consumer Durable Goods	3.7	Containers and Packaging	2.6
NPA Facilities (Industrial Construction)	2.7	Building Materials	3.5	Scientific & Technical Equipment	2.3
Metal Working Machinery	2.6	Scientific & Technical Equipment	2.7	Electronics	2.3
Electrical Equipment	2.3	Electronics	2.5	General Components	2.2



Use of Alternate Materials Stretches Supply

The Salvage and Reclamation Division of NPA has issued a comprehensive listing of basic materials and suggested alternates, classified according to their availability in relation to essential demand. Group I materials are in very short supply; alternates should be selected for these wherever possible. Group II materials are in approximate balance with essential demand; expanded use of these materials should be avoided. Group III materials are in fair to good supply; these materials should be used as alternates for those in Groups I and II whenever possible.

	Metals	Chemicals	Lumber and Wood Products	Textile Leather & Bristle	Misc.
Number of listed items:					
in very short supply	42	45	7	7	21
in approximate balance	15	51	41	20	14
in fair to good supply	13	41	45	13	19

Copies of the complete folder can be obtained from your District or Regional Office of the Department of Commerce. Queries and correspondence regarding listed items should be addressed to: the Editor, List of Basic Materials and Alternates, Salvage Division, National Production Authority, Washington 25, D. C.

military industry, there is a howl of public criticism.

Each industry files its claim for materials with the Government agency which acts as its claimant. The various Government claimants all present their claims for metals

to the Office of Program and Requirements of the Defense Production Administration. The Requirements Committee of the Office of Program and Requirements reviews the claims for steel, copper and aluminum presented by the claimants,

and determines what percentage of the claims can be filled.

When materials are available in such adequate supply that there is no rivalry among the various claimants for the steel, copper and aluminum available for a forthcoming quarter, the Controlled Materials Plan automatically goes off the books. It ceases to be a control mechanism, because the ordinary checks of supply and demand come into play.

Industry will know when this comes about as quickly as Government. A good educated guess is that by the third quarter of next year, available supply will again be adequate for unrestrained demand in steel and aluminum.

The tight spots then might well be the plating and alloying materials, but a CMP plan would not be warranted merely for these materials.

Immediate Problems

While this is the long-range view—and an optimistic one at that—the closer outlook is much less comforting. The requirements for structural steel were so bunched together that the shortage this fall, winter and the coming spring will be even greater than at present. On plating and alloying materials, it is likely that even the present level of permitted civilian use will have to be further cut back.

Increasing consideration is being given to the extension of the outright bans against some uses of short materials.

Unemployment Problem

Some indication of the NPA thinking on possible further cutbacks in civilian manufacturing is the weight being given to maintaining the level of industrial employment. Further cuts in automotive production might well create an unmanageable unemployment problem in the automotive industry.

With this in mind, NPA might maintain the level of automotive production, while further cutting back other products and eliminating some production altogether. The justification for such discriminatory action would be the large labor force employed in the automotive industry.

But there is an increasing degree of confidence that conservation, salvage and materials substitution will ward off the full impact of the shortages, and that the shortages themselves will be short-lived—barring, of course, an all-out war.

What Is The State of BUSINESS ETHICS?

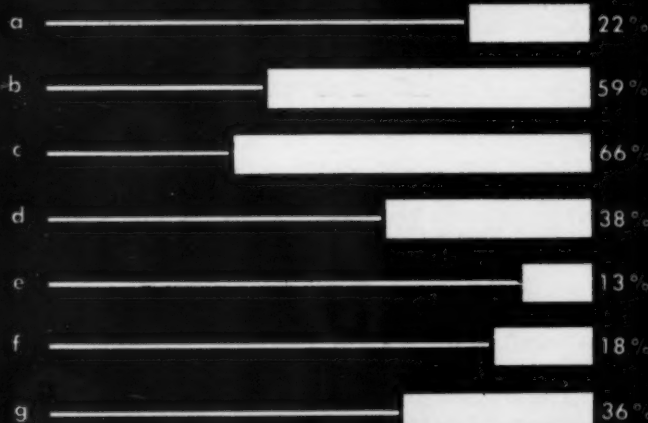
Recent shocking disclosures affecting many varied phases of our national life give evidence that sharp practice and dishonesty are far more extensive and insidious than had been generally known. Purchasing men are in a position to see the facts clearly, as they affect the business community, and they are pledged in their own professional code to combat unethical conduct in their dealings. We feel that the frank answers they have given will help establish the facts and clarify some of the problems which must be faced.

① From your experience and observation, has there been any general deterioration of ethical standards and conduct in business practices during recent years?



② If so, to what do you attribute such a condition?

- a. General postwar letdown
- b. Inability to do business by normal methods
- c. Influence of laxity in other phases of national life
- d. Overemphasis on dollar motive
- e. Protest or compensation for added business burdens
- f. Competitive necessity
- g. Opportunism



Many respondents offered additional reasons most of which would come under the above headings. Among reasons given: shortages, decline in spiritual values, feeling of uncertainty and insecurity in today's world, government corruption. Percentage figures on this question total more than 100% since almost all respondents made more than one choice.

③ In your opinion, does a businessman have any ethical responsibility for the standards and conduct of those with whom he has business dealings?



④ In your opinion, does the individual employee have an ethical responsibility for the policies of his company?



5 What is your suggestion for the most effective means of raising and maintaining ethical standards in business ?

A wide variety of suggestions were offered, many closely related to or complementary to others, and many were variations on a single theme. Refusal to deal with unethical firms or salesmen was named most often. Numerous respondents emphasized that this policy should be followed by firms only after they were sure their own standards were high. Many said companies should take pains to inform their own employees and the companies they deal with of their standards and demand that they be observed. Others said any sharp practices detected in business transactions should be exposed publicly and the offenders put on an unofficial blacklist. A call for observance of the Golden Rule and new emphasis on religion, morality and the Ten Commandments, both public and personal, was the second most numerous suggestion.

Better education of our people by schools, by their own industry, by their trade associations, and various forms of the same idea, made up the third choice. Better leadership in government, along with less red tape, less interference in business, and lower taxes was next. The selection of personnel with intelligence, integrity and ability, and the constant training and indoctrinating of these people with high standards was next. Complementary to this were numerous demands that top management take more cognizance of the work and problems of its departments and that employees receive salaries high enough to remove temptation. Several respondents suggested that industry at large adopt a code of ethics similar to the principles and standards of the National Association of Purchasing Agents. Other suggestions include: more specific terms and conditions in contracts and orders; heavier penalties for those guilty of unethical practice; elimination of government controls; elimination of monopolies; iron bound price control on distributors; greater emphasis on service; establishment of a firm pricing policy.

WHAT THEY SAY

"Individual top-ranking executives must practice good ethics as an example to those under them. They must also be ready to support an ethical decision of an employee, even if it means losing a momentary opportunity to make a fast dollar."

"Too many firms participate in acts of favoritism and price-cutting, thus working hardships on the remainder of the profession."

"Controls have set up a false requirement on the evaluation of ethics. Free economy will function on a much higher ethical plane than a controlled economy."

"Black market could be controlled if every P.A. would report concerns making 'over-market' quotations to governmental control center which would force seller to reveal source of supply and prices paid. Then follow them through to mill sources and place definite 'stopper' where needed."

"Think that the boys (unethical businessmen) have a way of knowing if you are apt to enter into this type of dealing before they offer same."

"Get more firms to subscribe to the principles and standards advocated by the National Association of Purchasing Agents. In our company this printed code is framed and in plain view of every salesman calling on us."

"Purchasing men are in a good position to eliminate quickly any company that fails to meet the highest standards of ethics. Unfortunately there are still a few purchasing men who do not measure up to N.A.P.A. standards. Since most of them are outside of N.A.P.A., there isn't much we can do about them, but we can and should insist on keeping our own membership 'clean'."

"Government must understand that business has to be given a reasonable climate in which to grow. To achieve this today, too many are willing to sacrifice their private opinions of government in order to garner fat profits. If this keeps up, business as such will cease, except as a function of government."

"The business man is forced to keep 'two sets of books' as far as ethics are concerned. Ethics toward other business men are one thing, toward the government, another. Excessive controls and the inability to do business by normal methods are the cause."

"There has been some improvement over conditions that existed

10 to 20 years ago. This is based on conversations with old salesmen who relate some of the shady buying and selling practices of the past."

"Maybe we are becoming more conscious of moral laxity, rather than more lax."

"I suppose that as long as businesses are run by humans, and operate in a competitive society, there will always be borderline cases of 'was it ethical or necessary to survive?'"

"My answer (yes) to Question 1, refers to the wave of offerings by fly-by-night opportunists during this period of shortages. There has been no deterioration of ethical standards among established business houses with whom we have dealt for many years."

"Situation may be more acute when the generation now growing up through the period of governmental laxity and hand-outs takes over the reins of business leadership."

"Personal integrity as well as ethical practices of the highest calibre are essential for every purchasing executive. His strict attention and adherence to this code will reflect favorably on the persons in his employ and also toward the firms with which he does business."

"There is undoubtedly much to be desired in some phases of our national life, which is bound to be adversely affected by emergency conditions. However, I am impressed by the large number of people who respond in such emergencies and undertake assignments which represent a real sacrifice."

"We strive constantly to get the best sources of supply for things we need. Reliability, fairness and decency of suppliers have a lot to do with our choices. Some firms have been supplying us for over 70 years without a break."

"Do you know many business men you could say were absolutely ethical in all their dealings? Not many, I'd wager."

"It is the old story of the slow educating process. I do not think ethics can be legislated. We grow up and live with them. We learn them at home, at school and in our religious training. I hope for a general moral renaissance."

"Publicity is always given to the corrupt and sensational news, little to the sound, ethical operation of the majority of business concerns. Our own profession is one which exemplifies the improvement in ethics."

Recruiting 7,000 New Sources of Supply

An interview with G. M. Haley,
Director of Purchases, Chevrolet
Motor Division, General
Motors Corporation

By Dwight G. Baird



Gerard M. Haley

Director of Purchases for the Chevrolet Motor Division of General Motors, reviews some of the thousands of inquiries from prospective suppliers hoping to share in the expanding program of defense production. Chevrolet, tooling up for important defense contracts, expects to subcontract about 60% of its parts requirements.

RECENT headlines in the nation's press proclaimed that General Motors Corporation is seeking 7,000 partners to help turn out some \$3.5 billion in arms. The story went on to say that the country's leading producer of military equipment (GM) expects to add that many suppliers to its list of 12,000 present vendors when it gets into full swing on defense work in 1952. As a result, many times 7,000 would-be "partners" are flooding GM and its divisions with inquiries.

There is no objection to such inquiries. On the contrary, they are welcomed. All are given proper attention, and are kept on file for further consideration when and if needed. Inquiries will be more likely to get some share of this business, though, and will be less likely to be disappointed, if they are acquainted with the facts and understand subcontracting policies and procedures.

General Motors was the leading producer of material for our armed forces in World War II. Its deliveries for the six years 1940-1945 totaled \$12.3 billion.

On July 14, 1951, D. F. Hulgrave, executive in charge of procurement and schedules activities of GM, appeared before a subcommittee of the Senate Small Business Committee. He said GM is being called upon to produce a wide variety of equipment, much of it of a highly technical and complicated nature. This equipment falls into three general groups:

1. Military items which the Corporation had been making for the armed forces before the Korean

conflict, such as aircraft propellers, bombsights and navigational instruments, Diesel engines, and Allison jet engines.

2. Products identical or similar to those made by GM for civilian use, such as trucks, staff cars, ball and roller bearings, and electrical equipment.

3. Military items unlike any that the Corporation makes in time of peace, such as tanks, planes, guns, projectiles, Sapphire jet engines, and Curtiss-Wright reciprocating engines.

Speaking of subcontracting, Mr. Hulgrave said (and we quote from the transcript): "The importance of suppliers in a mass production industry can hardly be overestimated. Many companies never have a prime contract, but confine themselves to making parts and components for the prime contractors. Still other companies make finished products as prime contractors themselves and also turn out parts as subcontractors. . . . In peacetime, General Motors has more than 12,000 suppliers. During World War II, the total rose to 19,000."

It is the policy of the Corporation, he said, to concentrate GM production facilities on the most difficult parts of these products, thereby making maximum use of Corporation know-how, and to subcontract as much as possible of the balance of component parts of all defense products to competent and dependable subcontractors who have equipment that can be used to produce such parts.

During World War II, GM sus-



Chevrolet uses the "clinic" method in deciding on the assignment of parts and subassembly production among the Division's several manufacturing units, in connection with its aviation engine contracts. W. J. Scott, General Manufacturing Manager (at right) and B. D. Marshall, Manager of all Chevrolet defense manufacturing plants (second from left) confer with executives from the Bay City, Buffalo, Cleveland, Detroit, and Tonawanda plants.

pendent manufacture of civilian passenger cars and went all-out in war production. To what extent it will engage in defense production in the current emergency, no one knows. At present, approximately 10% of its productive facilities in the United States are devoted to defense work; 15% are being used in connection with defense-supporting business (trucks, Diesel engines and locomotives, parts for the machine tool trade, etc.); and 75% in connection with civilian business. Superimposing a large volume of defense production upon as large a volume of civilian production as conditions will permit will result in a total volume of very large proportions, to say the least.

Who may become a "partner" of GM and get a share of this business? The answer is: Almost any reputable manufacturer of almost anything—"BUT".

Handled by Divisions

General Motors, as a Corporation, doesn't do any subcontracting. All of that is done by its 33 divisions. Each of these divisions has its own independent Procurement Department. Furthermore, many—if not most—of the more than 100 factories also have a Purchasing Department. If we want to know what GM's subcontracting policies are, and how the work is handled, we must go to the divisions.

A description of Pontiac Division's purchasing methods was published in the December, 1950, issue of *PURCHASING*; how Buick Division buys was told in the April, 1951, issue. To obtain specific information concerning current subcontracting procedures, we went to



Making the new Wright R-3350 aviation engine raises some production problems at the Tonawanda plant, and calls for a discussion among J. D. Greenough, Master Mechanic, A. R. Roskilly, Plant Manager, and Wm. G. Evringham, General Superintendent of Production.

Gerard M. Haley, Director of Purchases for the Chevrolet Motor Division.

During World War II, this division produced 8,000,000 shells, 500,000 cars and trucks, 60,000 Pratt & Whitney engines, 3,800 armored cars, 2,000 90-mm guns and 3,000 gun barrels for spares, 200,000,000 pounds of aluminum forgings, 5,700,000 magnesium castings, two billion pounds of gray iron castings, and other items.

Just how much of this business was subcontracted cannot be stated exactly, but an analysis of the Pratt & Whitney aviation engine contract, made in March, 1944, is indicative. Of the 972 parts in this engine:

Chevrolet made 316;
Other GM divisions made 19;
Outside suppliers made 637.

Chevrolet at present is a prime contractor for Wright Cyclone,

R-3350-26W, 2,700 h.p. aviation engines; Wright turbo compound, R-3350-30W, 3,500 h.p. aviation engines, and artillery shells. The shells now are in production at the Division's St. Louis plant, while the Chevrolet Aviation Plant No. 1, at Tonawanda, N. Y., is being tooled and expanded for the aviation engine job, largest Chevrolet defense contract. Production is expected to begin early in 1952. Chevrolet is also a subcontractor for Allison transmissions and army tank carriers for the Fisher Body Division. In addition, it has supplied numerous vehicles and parts to the Army, Navy, and Air Force, and is continuing to do so.

Subcontractors Needed

"How much of this business will be subcontracted?" Mr. Haley was asked.

"That depends upon circum-

stances," he replied. "Based upon past war experience, I would estimate about 60%."

"How many suppliers will you likely have?"

"That again depends upon circumstances. We have at present about 4,200 active suppliers. Upwards of 80% of these have been with us for over twenty years. Naturally, they are entitled to first consideration. We must keep them healthy during the emergency, otherwise they might not be available when we again need them for normal requirements. Our civilian production has already been reduced and may be reduced further. We must try to make that up by buying parts for defense production from them, provided they are qualified to supply such parts, as most of them are. Then too, we have eleven manufacturing plants of our own which we must try to keep busy, otherwise our own employees would be out of work.

"Nevertheless, we already have signed up many new suppliers of defense items, and we shall undoubtedly sign up many others as we get further along with our present defense contracts and probably add other contracts. Only about 20% of suppliers for our aviation engine contracts have been signed up thus far."

Wide Variety of Items

"What kinds of items for defense production are you likely to buy of outside suppliers?"

"Based upon our past war experience, I would say just about everything imaginable, and some things that one isn't likely to imagine."

Mr. Haley got an armful of inquiries from the office of one of his buyers and began turning through them. Mention of some of them here is not meant to imply that Chevrolet is going to subcontract for them immediately, if at all; they are merely cited as unusual examples of things that might be needed and where they might be obtained.

"Here's an inquiry from a maker of animal traps," he said. "We aren't likely to buy any animal traps, but this manufacturer also makes a small spade and numerous forgings and castings. We might possibly need some spades, or some forgings or castings which this company is in a position to furnish."

"Here's another, from a suspender and belt manufacturer. What kinds of defense items could such a manufacturer supply? Well, this one says he is in a position to supply web

straps, leather straps, bags and tarpaulins. All of these items were required in large quantities during the war. For example, we equipped some of our vehicles with a kit of tools in a canvas bag; we obtained those bags from a supplier from whom we procure seat covers as accessories in civilian production.

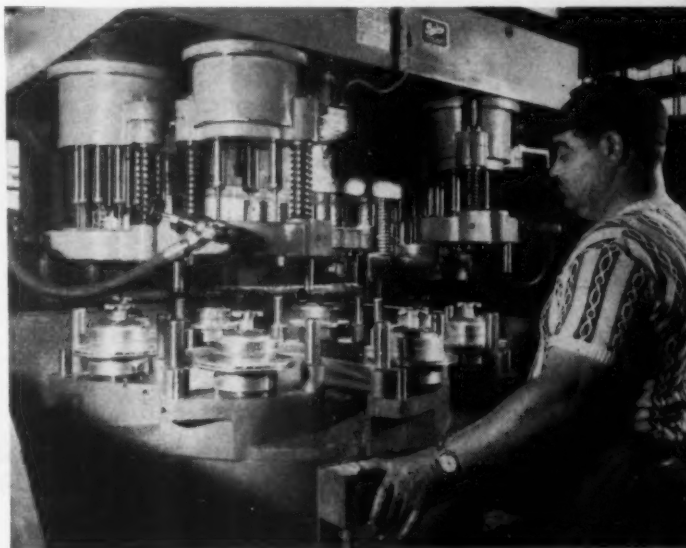
"Here's another, from a manufacturer of wire and Manila rope products. A good deal of rope is required for some war products, including Army trucks.

"Another is from a hardwood concern. We refer this one to our body plant at Indianapolis.

"Another is from a manufacturer of fire extinguishers. We don't equip our civilian vehicles with fire extinguishers, but during the war we bought thousands of them for crash cars and other vehicles.

"Another is from a company which stated that it made black-out lamps during the war. Such lamps are not needed at present, but they might be needed later on, so we preserve the inquiry and file it for possible reference.

Eight heads are better than one (on the machine, that is) in drilling, reaming, counterboring, and tapping at 26 places on the flange of a steering clutch for Army tanks. Seventy-one different tools work on the part in this complicated operation, and dimensions are controlled to one-thousandths of an inch.



"Another is from a steel and iron works which fabricates ferrous products. Something of the kind might be needed—a special grille for cars or trucks, for example.

"Here's one from a well-known maker of floor wax who suggests a dip coating compound for packaging. Might be needed.

"Another inquirer makes stabilizing jacks. We don't buy such jacks for civilian vehicles, but if we should supply cargo trucks, we might do so.

"One never knows what may be

needed or where it may be obtained, so we keep all inquiries and refer to them when we have occasion to seek suppliers. Then this information on possible sources can prove to be of great value. During the war, for example, one of our suppliers had difficulty in getting a small part for the rotating mechanism on the turret of the armored car which we were building. We got that part—of all places—from a manufacturer of household appliances."

Make or Buy?

"How do you decide which items to make yourself, and which to subcontract?"

"Before we sign a contract we have, of course, made an extensive study of the product—what goes into it and what operations are involved. Then when we get to the point of processing the job, our manufacturing manager and our engineers make a detailed analysis of the product, part by part. They usually concentrate our own production facilities on the most diffi-

cult parts, in order to make maximum use of our greater facilities and know-how.

"On the other hand, we regularly purchase some parts which we also make ourselves. We make gas tanks and fenders, for example, but we also buy them of suppliers—not because we don't have sufficient capacity, but for the sake of competition, greater flexibility, and shipping considerations. If we needed axles for a defense product, we might make them ourselves, we might have a supplier make them

August 16, 1950

Page #1

		BUYER NO.
ABSORBERS	SHOCK, INC. LINKS, EYE BOLTS, ALL DELCO PROD.	3
ACCESSORIES	ALL NEW CAR	3
ACIDS	BATTERY & PHOSPHORIC	3
ADAPTERS	SPEEDOMETER GEAR	3
ANTI-FREEZE		3
ANTI-SQUEAK	MADE FROM IMITATION LEATHER	9
ANTI-SQUEAK	MADE FROM CANVAS	9
ANTI-SQUEAK	MADE FROM FELT	5
ANTI-SQUEAK	MADE FROM RUBBER	11
BAGS	CLOTH, PAPER	9
BATTS	SEAT & BACK CUSHION	9
BATTERIES	STORAGE	3
BODIES	STATION WAGONS	3
BODIES	CARGO, DUMP, BOMB SERVICE, TELEPHONE & CRANE	2
BODIES	FISHER	3
BOOTS	GEARSHIFT	9
BRAKES	VACUUM POWER (BENDIX)	3
BREAKERS	CIRCUIT	3
BOLTS	HEI HD, SL. HEAD, CLUTCH HD, STEEP & COE	8
BULBS		9
BUMPERS	STEEL	10
BUSHING	BRONZE	9
CABLES	BRAKE	2
CABLES	TOW	2
CABLES	WINCH	2
CANVAS PARTS	COTTON DUCK & WEBBING	9
CAPS	GASOLINE FILLER, RADIATOR FILLER	6
CAPS	HUB	6
CARBURETORS		10
CARTONS	FOLDING & CORRUGATED	9
CASTINGS	STEEL, MALLEABLE, GREY IRON	2
CASTINGS	ZINC, DIE CAST	6
CANS	OIL	9
CEMENT	AND SEALING COMPOUNDS	5
CHAINS	TIRE	2
CHIPBOARD		9
CLAMPS	HOSE	2
CLEANERS	AIR	3
CLEVIS		2
CLIPS		2
CLOCKS		9
CLOTH	WIRE	9
COCKS	DRAIN	9
COILS	IGNITION	3
COMPOUNDS	POLISHING	9
CONDENSERS		3
CONTROLS	ACCELERATOR (BENDIX)	3
CONTROLS	REMOTE	6
COPO PARTS	SPECIAL	2
COVERS	SPRING	4

The wide variety of parts and products regularly bought by the Central Office Purchasing Department in Detroit are classified and assigned among the staff of eleven buyers. This is the first page of a four-page tabulation.

for us, or we might do both, depending upon circumstances."

"Then how do you find suppliers of items which you decide to purchase?"

"When we get a contract for a defense product, it is more than likely that we'll also get a list of sources who have been supplying parts or components for it, or who have been negotiating with the Ordnance Department. Then we consider our regular suppliers. If they don't have available facilities or capacity, we begin searching for other suppliers.

"We go through our files and study inquiries from all who might be in a position to furnish the items we require. It doesn't matter very much what they make in the way of civilian products; what we are interested in is their facilities for making what we need. Then of course we also invite recommenda-

tions from our established suppliers, from our other Divisions, and from all possible sources."

Qualifications of a Subcontractor

"In considering a potential supplier, how do you determine his qualifications?"

"If he has submitted a comprehensive inquiry, we are able to learn a great deal from it. If we are not familiar with his facilities, we send one or more competent men to survey them. Our general manufacturing manager has on his staff a corps of men who have held responsible positions in our engineering and production departments, having a broad practical knowledge of manufacturing methods and requirements. One of their duties is to survey facilities of suppliers and would-be suppliers. When they do so, they submit a written report, oftentimes

accompanied by detailed drawings and other exhibits.

"Suppose we need canvas bags, and we know that a given inquirer has considerable sewing machine capacity. But when we survey his facilities, we learn that his equipment is suitable only for sewing cotton fabrics, whereas we require heavy canvas. In such a case, we must regretfully inform him that his facilities are not adequate, and we must consider some other possible sources."

Subcontractor Procedure

"Briefly, what is your procedure after it has been decided which parts to make in your own plants and which to purchase?"

"We first get an engineering notice for tool cost estimate. We then send out inquiries to all potential sources, inviting bids. When all quotations are in, we make out a summary of developments, listing the names of bidders, location, shipping points, terms, etc. Meanwhile, if we are considering a new source, our representatives have surveyed its facilities and submitted recommendations.

"All of this information is reviewed, and the supplier or suppliers (for civilian parts we always have two or more suppliers) are selected. We then negotiate and sign a purchase agreement with the suppliers. In peacetime, this agreement specifies that we will purchase a stated percentage of our requirements of parts named and identified by number, at stated prices, on certain terms, etc. The actual quantity depends upon our rate of production, and deliveries are made only as released.

"Another engineering notice is for tools and equipment, and a third is for production. This is the authorization to begin buying parts as needed for production.

"This engineering production notice goes to what we call a clearing house—a kind of liaison office between Engineering, Purchasing, and Materials Control. This office makes up a usage card and a specifications card for Materials Control, and orders samples from the supplier. The number of samples required in peacetime usually is 16 for defense items, the number usually is smaller. Samples are submitted to our laboratory, to our Standards Department, to each of our plants concerned, and to our sample room. Every time there is an engineering change, new samples must be obtained.

"Since, under our system, the purchase orders and shipping releases are issued by Materials Control, Purchasing is left free to concentrate on selecting sources, negotiating prices and terms, and maintaining favorable relations with suppliers."

How to Get Subcontracts

"What suggestions would you offer to those who would like to obtain defense subcontracts?"

"The first thing, I should think, would be that they subscribe to one or more periodicals which regularly publish announcements of the awarding of defense contracts. It would also be well for them to contact their nearest Army, Navy, and Air Corps Ordnance district offices.

"It is essential that they make an analysis of their facilities, the specific types of operations their equipment will perform. Never mind what defense items they may think they are prepared to supply; some prime contractor very likely will want them to supply some item they never thought of.

"When they learn that a defense contract has been awarded, they should send a concise but comprehensive inquiry to the contractor. We receive inquiries ranging all the way from a one-page letter to elaborate brochures and portfolios. Any inquiry should include such data as:

"Civilian products manufactured, accompanied by folders, catalogs, and other pertinent exhibits;

"Listing of principal customers;

"World War II products manufactured, if any, and for whom;

"Size of plant and type of construction;

"Detailed list of equipment and its age and condition;

"Personnel, including names of company officials, name of plant supervisor and other major executives, and number of employees;

"Latest financial rating."

"After a company has sent you one inquiry, should it continue to contact you, either by mail or personally?"

"Well, you can't blame them if they make every effort to get business. On the other hand, they may rest assured that we have their original inquiry on file and that it will receive our careful attention as often as we have occasion to search for a source on any item they may be in a position to supply. As I've already said, we keep them all on record, regardless of how foreign their civilian products may seem to be to defense production. One never knows when something which they

could supply will be desperately needed.

"A personal call, if convenient, may be helpful, but to keep on calling at frequent intervals places an unnecessary burden upon our procurement personnel at a time when we are already burdened with necessary work."

"If you receive an inquiry concerning an item which you don't require at the time, but which some other GM Division may require, do you pass it on to that Division?"

Inter-Division Coordination

"Not unless the Division asks us whether we know of any such sources. We do inquire of one another when we have occasion to do so, so that the source information in any Division is available to all as a matter of mutual cooperation and assistance. But we do not make a practice of turning inquiries over to one another.

"We keep the inquiry in our own records because, as already explained, we never know when we might need it. Not only so, but we assume that the inquirer is sufficiently well informed and has the

some defense work also contact subcontractors?"

"Yes, indeed. Practically all subcontractors, even the smallest, have to buy materials and supplies, and many of them subcontract parts also, in turn. The inquirer should use common sense and good judgment in broadcasting his inquiries."

No Expeditors

"Having awarded a subcontract, to what extent do you employ expeditors to keep in contact with the supplier to see to it that he keeps the parts coming on schedule?"

"We don't employ expeditors at all, in the usual sense of the term. If a supplier has difficulty in meeting his schedule, we make inquiry or send a competent representative to find out what the trouble is. If he can't get materials, we try to help him do so. If he has manufacturing problems, we send engineers, production men, metallurgists, or other specialists to help him."

With this inside view of the subcontracting policies and procedures of the nation's biggest producer of defense products, we conclude that one who hopes to become one of the



Final stages in the production of planet carriers, part of the tank transmission manufactured at Chevrolet's Saginaw, Michigan, plant.

initiative to direct his inquiries to the contractors who are likely to have need of something which he is in a position to supply. This would include the various GM Divisions, as well as other prime contractors. In our own Division, of course, we forward inquiries to our plants concerned."

"Should those who wish to obtain

7,000 new "partners" of GM by getting a defense subcontract should address his inquiries to the several GM Divisions, and not to the Corporation itself; and that his prospects of getting such defense work will be enhanced if he places complete information on record, following the suggestions made above by Mr. Haley.

The Air Age in Purchasing

Editor George E. Henry accompanies Purchase Director James Clark McGuire, The Port of New York Authority, on a flying tour of PNYA supply warehouse facilities

THE Port of New York Authority properties, including the International (Idlewild), LaGuardia, Newark, and Teterboro airports, the George Washington, Bayonne, and Goethals bridges, the Holland and Lincoln tunnels, and mammoth grain and bus terminals serving the metropolitan area, extend over a 25-mile radius from the headquarters building in the heart of Manhattan. To make the rounds of these facilities by ordinary means of surface transportation through congested city traffic—as purchasing, engineering, supervisory, and administrative personnel frequently had occasion to do—was a solid, wearisome three-day chore.

Last May, the Port Authority purchased a Bell 47D1 helicopter and installed a heliport atop the administration building, some 300 feet above

street level. With a cruising speed of 75 to 90 miles per hour, and avoiding traffic delays and detours, the immediate result was to bring all PNYA facility locations within an easy 10 to 15 minutes flight from the executive offices. Records show that executives and supervisors save an average of 54 minutes per one-way trip as compared with the time consumed by ground transportation. Three days' work is now accomplished within three hours!

The PNYA supply system is organized on the basis of decentralized storerooms located at the various facilities—highly efficient for local service, but hard on headquarters purchasing personnel until the helicopter service was available. The accompanying photographs illustrate a routine inspection tour made by the Director of Purchases.



They're off! Purchaser McGuire, Editor Henry, and Pilot Ted Leopold rise vertically from the Manhattan rooftop heliport and head west toward their first destination, the Lincoln Tunnel Building on the New Jersey side of the Hudson River.

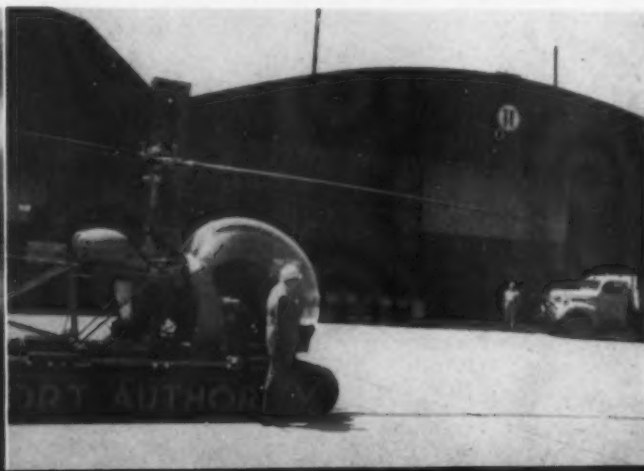


Target. The PNYA Police lieutenant at Lincoln, notified by phone of the impending visit, hardly had time to don his cap, jacket and white gloves before the helicopter nestled to a gentle landing, just 3½ minutes after the take-off.

McGuire confers with local storekeeper Walter Taylor at the Lincoln Tunnel storehouse, on a problem of maintenance paint. The personal contacts made possible by helicopter transportation are invaluable in smooth purchase and stores operation.



An eight-minute flight from the Lincoln heliport, over the Newark Channel, and the helicopter sits down on the concrete apron of the Newark Airport, practically at the front door of Storekeeper Joe Lynch, who comes out to greet the Director.





Stores department at Newark Airport. More than 11,000 items are kept in stock at the various PNYA locations. Personal consultation is far more satisfactory than memos and phone calls for inventory control, inspection, and transfers.



Newark to Idlewild is two hours by car—twenty minutes by helicopter. Supt. George McSherry accompanies Mr. McGuire in looking over the \$150,000 worth of new emergency equipment recently purchased for the 4900-acre airport, world's largest.



Looking down on the New York skyline and East River bridges. The plexiglass body affords complete visibility in all directions, including straight down, and the helicopter flies at low altitude to avoid the airplanes of commercial planes.



From Idlewild to LaGuardia Field on the north shore of Long Island. Ten minutes later, they come in for a landing in the 20-foot circle on the gravel roof of the George Washington Bridge building (foreground) atop the Hudson Palisades.



Back to headquarters. The trip from the bridge requires 40 minutes by subway, an hour or more by automobile, but just 9 minutes by helicopter. The "grand circle" inspection tour was completed in three hours—formerly a three-day job.



Leaving his passengers at the office building in Manhattan to resume their normal daily activities, the pilot flies the PNYA helicopter back to LaGuardia Field and lands it on a dolly to be towed into its hangar for the night.

Single Form Appropriation System Gets Prompt Management Action

By B. P. Hamilton, Jr., Facilities and Systems Manager, Piasecki Helicopter Corporation, Morton, Pa.

USING the appropriation request form illustrated herewith, department heads of the Piasecki Helicopter Corporation obtain prompt and well informed decisions in response to their requests for new facilities. By listing all pertinent appropriation information on a single sheet, and by using this form in minimum copies, paperwork is reduced and immediate management attention is secured.

This single form combines the elements and serves the functions of:

- a. Request for appropriation.
- b. Specification of equipment desired.
- c. Cost estimate, for purchase of new or used equipment, including accessories and installation.
- d. Comparative analysis of operating methods and costs, with projection of annual savings and cost recovery.
- e. Approval or revision.
- f. (with supporting drawings and detail) Purchase Requisition.

It has been Piasecki's experience that prompt pre-procurement action can be secured when such decisions are based on full information. The appropriation request form is designed to provide this information, in full pertinent detail arranged for quick analysis, so that the complete picture is shown on one side of a single 8½ x 11" sheet.

Appropriation requests originate when department heads use regularly supplied sales estimates to determine their projected equipment needs, and when production engineering, facilities engineering, purchasing, or other departments believe that machinery or equipment should be added to improve manufacturing, engineering, or office efficiency. The originating service or operating department prepares an appropriation request by listing the following information. (Numbers

correspond with locations indicated on the specimen form.)

1. The facility name.
2. A complete description of the facility, including the quantity required, the capacity of each unit, and other pertinent data.
3. The application of the facility, i.e., the specific part which the facility will be used to make, or other specific application for which it is intended.
4. A complete description of the present way of doing the job, listing each aspect of the present methods in full detail, but without evaluating these methods.
5. A description of the proposed method, pointing out how, with the addition of the requested facility item, improvement would be made so that better work, reduced costs, or a reduced time cycle would be secured. (Items 4 and 5 are in parallel columns for ready comparison.)
6. Cost detail of the item, if purchased as new equipment or as used equipment.
7. Cost of doing the work using present facilities, showing direct labor costs and employee service costs (computed at 10% of labor cost), including social security and insurance payments; interest on investment computed at 6% of the original cost of facilities; power and supplies; depreciation computed at 20% of the original cost; insurance and taxes.
8. Corresponding computation of the cost of doing the work using the proposed facilities and methods. (Items 7 and 8 are in parallel columns for comparison.)
9. The difference in costs from items 7 and 8 is computed and listed to show the estimated net annual savings and the number of months required to recover the suggested facility investment. (In this case,

company policy restricts facility purchases to items that return their cost in one year's time.)

The originator forwards the appropriation request form, with the above-listed information filled in, to the Facilities Office, where it is assigned a number and an appropriation period. Previous requests are noted, and recommendations are made as to the purchase of a new or used item. When the facility proposed requires installation work, or plant rearrangement, of the construction of a plant addition, the Facilities Office obtains an estimate of cost from Plant Engineering and adds this amount to the appropriation request. To simplify this work, the Facilities Office uses standard installation costs for common machinery and equipment units that are supplied by Plant Engineering.

The requesting department normally initiates the appropriation request in two copies and forwards both copies to the Facilities Office. If he wishes to retain a copy, the department head prepares and retains a third copy for reference. The Facilities Office reviews the appropriation request to determine the basic soundness of the proposal, and if necessary returns it to the initiating department for further information.

The Facilities Office adds supporting information to the appropriation request in the form of vendors' catalogs describing and pricing the items (and alternative items). This information is obtained from the Purchasing Department, and in most cases is available from the purchasing file of currently manufactured machinery and equipment.

If the request will lead to additional plant maintenance work, the Facilities Office prepares a drawing that lists the work that is to be done and specifies the materials that are

Dept	Facility Name	\$ Cost	Date Issued	Date Required	#
Facility Description		Requisition #	Approp. Period		
Facility Application		Account #	Previous Request		
Describe Present Method		APPROPRIATION REQUEST			
Describe Proposed Method		Cost Detail			
		Description	New	Used	
		Base	\$	\$	
		Accessories	(6)		
		Immediate			
		Desired	()	()	
		Transportation			
		Rebuilding			
		Installation			
		Total			
		Recommend either New or Used			
		Action Taken or Revisions Requested			
Yearly Savings Computation		\$ Present Method		\$ Proposed Method	
Labor		(7)		(8)	
Emp. Ser. Cost 10% of Labor Cost					
Int. on Invest.-6% on Orig. Cost					
Power and Supplies					
Depreciation - 20% of Orig. Cost					
Insurance and Taxes					
Maintenance					
Total Cost					
Number of Months Required to Recover Cost		(9)		Net Annual Savings - \$	
Using Sub-Div.	Requested By	Date	Department Head	Date	Division Head
PHC 421-02					President
					Date

When new equipment or other facilities are desired, this single form serves to describe the proposal, with supporting cost analyses, initiates the request for approval and appropriation, and becomes the requisition for an authorized purchase.

to be used. With this supporting information, the request is attached to a folder, using standard loose-leaf binder attachments. The request and its supporting information are then routed to the General Manager for approval.

Requests thus approved are accumulated by the Controller's Office and then submitted to an Officers'

Committee at regular monthly meetings for final approval. The Controller's Office notes the action taken by the committee in the space provided on the form for this information. This action may be approval, rejection, return for revision or other suggested alternate action. The noted copy is then returned to the Facilities Office, where this in-

formation is added to the office copy of the appropriation request.

In cases of approved requests—such action being facilitated by the completeness of pre-procurement information and computations—the approved copy and attendant data is routed to the Purchasing Department, where it serves as the approved requisition authorizing purchase of the item needed.

Manuals for Plant Protection

PLANT protection against sabotage once more ranks high among management responsibilities under the defense mobilization program. Property destruction is one phase; possible loss of vital production capacity, upon which the Department of Defense must depend to fight a war, is an even more serious aspect.

The Civil Defense staff of the State of New Jersey has issued a manual classifying every industrial plant in that area in 4 general cate-

gories. By authority of state law, the manual requires each plant to appoint a coordinator for plant protection, and the state police are actively engaged in training plant protection personnel to recognize and meet problems involving sabotage hazards.

Munitions Board has prepared a pamphlet on "Principles of Plant Protection", available from the Superintendent of Documents, Washington 25, D. C., at 15 cents per

copy. On the related problem of espionage, a similar pamphlet, "Industrial Security Manual for Safeguarding Classified Matter", is available at 10 cents per copy. Emphasis is placed on preventive measures, involving careful screening of employees and job applicants as well as the physical equipment and techniques of protection. In the case of subversive personnel, the FBI is the government agency to be alerted for protective action.

A Progress Report on DEFENSE MOBILIZATION

By Charles E. Wilson, Director, Office of Defense Mobilization, Washington



The new armored personnel carrier, developed by the Ordnance Corps and put into the field only last August, enables the Army to put infantry in spearhead elements along with the tanks, affording greater mobility, speed and protection than earlier models. It also doubles as a cargo or litter carrier, a prime mover for towing artillery, or a command-post car.

In this extract from an address before the National Institute for Chamber of Commerce and Trade Association Executives at Evanston, Illinois, the Director of ODM answers some of the questions on production problems and schedules in the mobilization program, with confidence that the goals will be attained.

Photographs by courtesy U. S. Department of Defense

ON the production side of defense mobilization, we are running somewhat behind schedule as we tackle problems whose existence was plainly foreseen. The term "bottleneck" is a familiar one even in nor-

mal production; it would be miraculous if we did not encounter the term in a program which involves, roughly, the expenditure of fifty billion dollars a year for three years. We are trying to anticipate and avert bottlenecks that could have serious consequences.

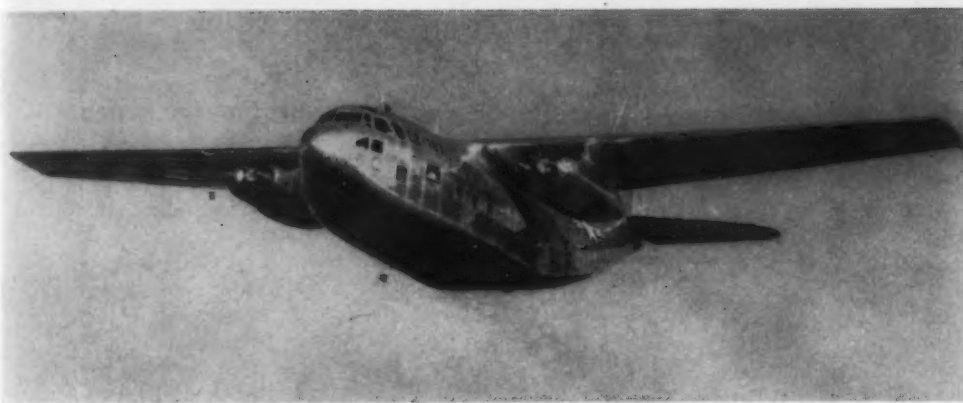
Tooling Up

A good deal of attention has been focussed on the shortage of machine tools. It is in the nature of things that this should be true. It is only in time of war or preparedness for war that tremendous demands are made upon this industry. The industry would go broke if it kept its productive capacity up to the extraordinary level that is created by national emergencies. Production of machine tools tapered off when

World War II ended; it must now be stepped up to concert pitch.

For that reason, the industry has been granted super-priorities of raw materials; its price structure has been revised; its financing problems studied; its supply of manpower assured. Every possible fair incentive is being offered to increase machine tool production. In addition, we are going to place large pool orders for machine tools with such concerns as automobile manufacturers who have tool rooms. These orders are over and above the capacity of machine tool builders.

Meanwhile, if we take a look at production figures, we find there is no reason for exaggerating the machine tool situation. In the last war, machine tool production



Freezing of design standards would be fatal to progress in the fast moving aircraft industry. This highly useful new equipment, the Air Force's Chase XC-123A assault transport, had its initial flight on April 21, 1951. It was developed from an earlier version of all-metal cargo glider, adapted for jet propulsion. Standardization principles have been applied in the basic airframe design, which is the same for glider, propeller driven, and jet powered models.

jumped from \$200 million in 1939 to \$400 million in 1940—in other words, production doubled in one year. It practically doubled again in the next year, going from \$400 million to nearly \$800 million. In 1942 it was almost \$1,500 million.

The figures for the present time are following—indeed, improving on—the same pattern. That is to say, production in 1951 is running at a rate more than twice that of 1950. In the last year, the machine tool builders had a running start from British and French orders. This time they began building their productive capacity from a standing start. This means they will have to do an even greater job than before, and they will need every assistance from ODM. Furthermore, the need for unusual tools, called for by new designs, emphasizes the obstacle to be surmounted by defense mobilization and the machine tool builders.

Providing the Materials

We are constantly battling, too, with material shortages. These, too, were foreseen. Armaments chew up enormous quantities of steel, aluminum, and copper. Therefore, steps were long ago taken to increase our capacity for these metals. Our steel program contemplates expansion from 100 million tons to 118 million tons; aluminum from 750 million tons to double that figure.

Copper is a special story. We cannot expand domestic production much, but we have recently concluded an agreement with Chile to increase our imports of copper.

Another materials problem which is severe and will become more so lies in the shortage of alloy metals for which we must depend, for the most part, on foreign sources. Large quantities of high grade alloys—therefore large quantities of tungsten, vanadium, chrome, nickel, cobalt, and the like—are needed to

build jet engines, tanks, and other weapons. We are attacking this problem by scouring the world for new sources of supply, by cutting back their civilian use, and by employing substitutes wherever possible.

Our expansion program includes the greatly increased production of electric power, an increase in oil well drilling, the stepped-up manufacture of freight cars, etc. The whole productive base of the economy is being enlarged to produce the torrents of defense products that are needed while, at the same time, preserving a civilian economy at or near pre-Korean levels. This nation is so blessed with natural wealth and energy that it is possible to do both jobs at the same time.

Post-Crisis Economic Implications

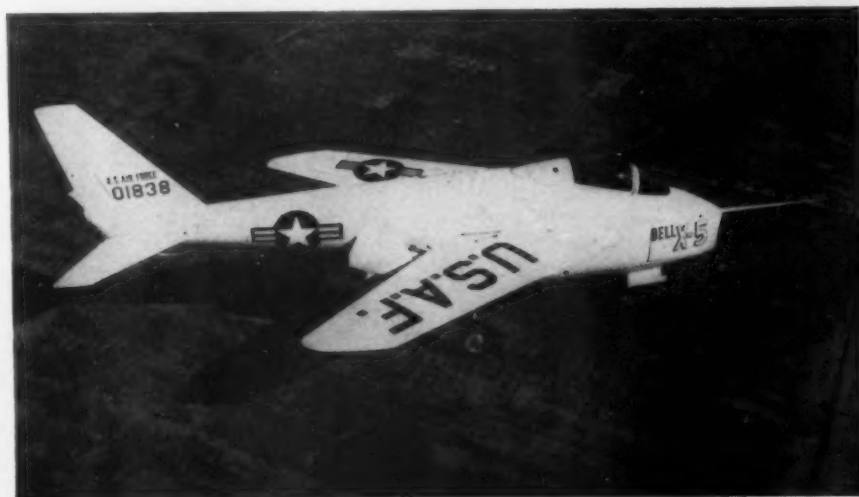
I am not in the slightest degree disturbed by what we are going to do with increased capacity and in-

creased production if the present crisis should end. To begin with, it is a crisis that may be with us for years, and there can be no thought of letting down. But even if the world situation should improve markedly, many of the expansion programs we are engaged in now can be used to improve the living standards of the American people.

I believe we are on the threshold of a new era in the Industrial Revolution—an era that could be devoted to gracious and bountiful living, not only for ourselves, but for other peoples, were it not for the black shadows that Moscow has cast over the world.

I call your attention to the fact that no great depression followed the end of the last war, though it was freely predicted. The prophets said we would have eight or nine million men walking the streets looking for work. But the gloomy predictions did not come to pass. Instead, the American economy soared to new heights of production

The changing silhouette is not a matter of caprice or style, but the evidence of technical development and greater effectiveness. The experimental Bell X-5, with movable wings, is adding measurably to our knowledge of the effect of wing angle upon flight characteristics—may give rise to further design changes.



and consumption, and still many wants remain to be satisfied and could be satisfied if the threat of war were removed.

Anti-Freeze on Design

I hear it said of the defense mobilization program that much greater progress could be made if military equipment designs were frozen, and if we devoted ourselves entirely to mass production of designs already perfected. Perhaps so. But I, for one, would hate to stifle the wonderful inventiveness of American engineers and craftsmen who, especially in a period like this, burst with new and brilliant ideas.

I wish I had time to tell you the improvements that have been made only recently in hundreds of important items. I could tell you how the pack of the infantryman has been made lighter—and any of you who ever carried a pack I am sure will shout hosannas at such a development. I could tell you how the soldier whose task it is to establish communication at the line of combat now carries easily on his back a coil of wire that formerly needed almost a mule to haul. The improvements that are constantly being made in aircraft and tanks contribute to the safety of our men and the consternation of the enemy.

So I would not lay a heavy hand on American ingenuity, and I would not arbitrarily bar the use of new designs though, of course, there comes a time when such changes could be merely capricious. Let me point out that there is an element of successful production that far outweighs such temporary interruptions caused by design changes. I refer to the formation of great production teams—teams where each man knows his foreman, each foreman his superintendent, each superintendent his general manager; where each man knows where to lay his hands on the tools he needs; where

he should go with suggestions and complaints, etc.

It is not necessary to tell Americans the importance of teamwork. They know that a well schooled and coordinated baseball or football team can beat a group of individual stars



Success of our armies in the field depends largely upon furnishing them with the latest and most effective weapons and equipment. Here is a shipment being unloaded at Inchon, Korea, in June.

not used to playing together. Well, all over the country we are building these great production teams, where each man knows the role he is supposed to play and each boss knows his men. It is a comparatively simple thing, once a production team has been knit together, to introduce new designs and new tasks. They take

such things in their stride with a minimum of fuss and delay.

Production for Peace

I am an optimist about the capacity of America to produce, and it is an optimism based on what I have observed during my lifetime. Our production in World War II was credited by Joseph Stalin with being a major factor in winning the war, and that gentleman is not exactly free with the bouquets he tosses at the United States. The prodigious production accomplishments of 1941-1945 we can now surpass.

The difference between then and now, however, is of utmost importance. Then we were engaged in all-out war. Now we are engaged in a less dramatic effort, yet one that can yield results of the most splendid kind for humanity. In brief, it is the considered opinion of America's leadership that the effort we are making now is the only way a third world war can be averted.

We all remember the horrors of the last war. In the newspapers every day for more than a year we have read of the horrors of war in Korea. It does not take too much imagination to picture the next world war, with the possible use of atomic weapons, as one which may well write finis to civilization itself.

In the light of the stakes involved, it is little enough to ask of the American people that they accept the sacrifices that are involved in building America's might in the interest of peace. It is little enough to ask them to restrain themselves from "getting theirs while the getting is good", from complaining against inflation safeguards that are really designed for their own protection, from spending money for unnecessary things, from hoarding and patronizing black markets—from all the small acts which, in the aggregate, become serious national problems. It is not too much to ask of Americans that they exercise a measure of restraint and self-discipline in this, one of the most critical periods of world history.

With such a sense of individual obligation to the nation, and with the help of Almighty God, which we always need to guide our footsteps, we can win through. We can dispel the black shadow of Moscow. We can keep the world in peace. This is a duty we owe to our youth and to the unborn millions that will come after us. Two world wars in one generation are enough. Let us be willing to work and sacrifice to prevent another.

Not all of the improved military items are in the field of weapons and heavy equipment. One of the most useful is the miniature can opener, now issued with C-rations, weighing less than two-tenths of an ounce and costing less than two cents. In a recent 6-month period, 68 million of these were purchased, replacing key-type cans formerly used.



REFRACTORIES

Facts and Factors

By E. L. Cady



Typical boiler setting installation, using standard fire clay brick laid up with refractory cement.

REFRACTORIES derive their name from the fact that they are resistant to high temperatures or to chemical action. Some are resistant to both, but this depends upon the chemicals and the conditions of contact as well as upon the refractory materials themselves. By some scientific theories, refractories should be among the strongest of materials, mechanically, but they are not. Their differences of physical

strength under varying service conditions constitute one of the chief difficulties in selecting and purchasing them.

Refractory production and application is big business. There are dozens of companies engaged in this field, ranging from large national organizations listed on Wall Street's "Big Board" to small local concerns. Their products are diverse to some extent because each com-

pany makes best use of raw materials obtainable near its plants, and to a greater degree because industrial science is making the best use of all such raw materials as are known to be refractory.

Size of Requirements

Where refractories are used in large quantities, as in steel mills, their purchase engineering is one of the most highly developed phases of

buying science. But among the thousands of purchasing agents who buy refractories only occasionally, and in comparatively small quantities, they can be a severe test of purchasing skill.

This is especially true because refractories usually go into furnaces and similar structures which are expected to have long service lives, low depreciation or obsolescence rates, and low maintenance costs. The selection of a refractory can affect all of these factors and, in addition, such immediate operating costs as fuel quantities and costs, worker comfort, production output and costs, and quality control of the materials processed.

refractory structures, and because they have highly skilled labor for refractory installation and maintenance.

The smaller user often arrives at the highest net value if he discards all other considerations in favor of the refractories which will give him the highest operating effectiveness and the least maintenance trouble with the "run of mine" operating and maintenance crews immediately available to his plant. He may pay more per cubic foot of installed refractories under this policy, but he will probably get far more than a corresponding increase in the net profitability of his equipment, while

mastics to be rammed into complete joint-free structures, or into blocks which will be laid up with cements, or into specific parts of structures such as the areas around door openings.

5. Castables, which can be mixed and poured like cement concretes into molds to form blocks or complete structures.

6. Loose materials of various grain or particles sizes, which can be used as beds for blocks or other solidified structures to rest upon or against.

7. Mastic or plastic blocks which may be laid up with or without bonding cements, pressed or formed into shapes, or treated like rammed mixes.

8. Special edged forms, such as steel edged blocks in which the edge materials take part in the bonding and may also act as reinforcements of the structure.

Factors in Selection

Structural Design. So many different standard shapes and dimensions of refractory blocks are available that only a rare need for specials should occur. Where bricks or other blocks are to be used, the structure should be worked out—either on the drawing board or in miniature replicas on the order of a child's building blocks—until the best design using standard blocks is obtained. Where rammed materials or castables are to be used, the design should be made with equal care. The use of steel supports from which parts of the refractory structure can be suspended should be studied.

Sizes of Blocks. Material for material, large blocks involve more temperature-spalling problems than do the smaller ones. Small blocks are costlier to install, in cement and in labor costs, and if they are not perfectly laid they may be more prone to abrasion, erosion, and problems of chemical attack. Block sizes should be discussed fully with operating engineers and with the vendors' sales engineers.

Labor for Installation. Refractories installation is not ordinary masonry. Some of the rammed types, mastics, and castables can be installed by labor having no special training. But for block structures, especially when severe conditions are to be encountered, there is no such thing as having too highly skilled labor. If experienced labor is not available in the plant, then a contractor who has the skilled men should be employed.

Burning In. Some refractory ce-



Careful finishing of interior surfaces, eliminating projections and imperfect joints, adds greatly to refractory life and avoids spot failures.

Large consumers pay attention to points of origin and consequent freight expenses, to the possibility of using two or more kinds of refractories and cements in the same structure in order to cut down first costs, and to cutting the labor costs of installation by studying the standard sizes of blocks and also the possibilities of special sizes. They can do all this effectively because the refractory equipment will be operated by men who know how to balance operating methods against the chances of damage to the re-

avoiding the necessity for frequent and expensive replacement.

Many Forms Available

Refractories can be purchased in many forms:

1. Standard blocks and cements.
2. Special dimension standard composition blocks to be laid with standard cements.
3. Special composition blocks of either standard or special dimensions, to be laid with either standard or special composition cements.
4. Rammed types, which are

ments, and some castables, mastic bricks, and rammed types, must be "burned in" by having the structures in which they are used brought up to temperatures on the order of 2,000° F or even higher before the structures may be put into service. Others do not need this. Although the purpose of the structure must be considered in selecting the refractory material, and although the types which need burning in may be of lower first cost, the need for this operation should generally be avoided by the smaller user.

Predicted Maintenance. Some of the ordinary maintenance requirements, such as repairs of mechanical damage around doors, are predic-

tories; therefore it cannot be reduced to a stated coefficient. But it must be carefully considered when selecting the refractories to be used for any given set of conditions. Typical causes of thermal shock are burning of waste materials in furnaces, high rating use of boilers, rapid heat-up or cool-down between heats, entrance of cold air and cold materials when charging the furnace.

Temperature Differentials. Within broad limits, the higher the temperatures that refractories must meet, the higher is the first cost of the refractories. Consequently, where wide operating differences exist between temperatures at dif-

materials behind the refractories which face the heat may be advantageous in a number of ways. Among the values obtainable by this method are:

Conserve heat and fuel;

Guard workers' comfort in the areas close to the structures;

Reduce some of the bad effects of thermal shock by reducing the thicknesses of face materials within which the shock can take place;

Aid in controlling gas leakage outward from the furnace and air leakage inward when the structure becomes worn;

Reduce over-all weight, physical bulk, and first cost of the structure.

The insulation material for such applications must be able to withstand the interface temperature between itself and the face refractories. The thinner the face material, the higher this interface temperature is likely to be. Also, don't overlook the fact that the use of insulation may expose the face materials to harsher temperature problems and thus require higher quality face materials to be used.

Heat Retention. For intermittent use, when a furnace is frequently heated up and then allowed to become cold, it may be economical to use refractories of very small heat retaining capacities in order to reduce the cost of heating the furnace and reduce Btu losses when the hot walls cool down. But in a great many processes, a "bank of heat" retained in the furnace walls, to be given up as the charges needs it, will both improve the quality control of the materials processed and reduce the thermal shock damage to the walls. Where intermittence of use is slight enough so that the furnace is not cooled materially, but is only allowed to go to a "holding temperature", a high retention of heat may save fuel—both while holding the temperature and when heating up to operating temperature. Where use is intermittent, the ultimate cost of a structure may need to be measured in "cost per heat" or "cost per hundred heats" as contrasted with "cost per hundred hours" which would apply where use is more continuous.

Thermal Expansion. The size of a structure as measured in square feet, or in the longest dimension of the face directly affected by the heat, establishes the value of the problem of thermal expansion and contraction under temperature changes. Some refractory materials are pyroplastic and will take up the expansion within themselves at suitable temperatures; others must have



Installation of a plastic refractory facing. Thickness may be varied to meet specific requirements at various areas of the structure. "Burning in" will increase the strength of the material.

table when the structure is designed. The design should be such as to make such repairs easy. Among the maintenance resources for meeting such conditions are the rammed types, mastic blocks, daubing mixtures, coating mixes which can be applied by hand or by air gun, and castables which can be formed into special shapes to fit the damaged areas.

Thermal Shock. Rapid heating or cooling may result in warping, spalling, or cracking of refractories. The permissible rate of temperature change differs with various refrac-

ferent areas of a structure, there may be a substantial advantage in using different types or different thicknesses at these various areas. Also, a cement which will burn in and materially increase its strength at the hotter areas may be unaffected by the heat (and so may remain weak) at the cooler areas. Under such circumstances, the use of two different cements, or of a single cement which does not require burning in, may be indicated.

Insulation. Not all good refractories are good heat insulators. The use of insulating brick or other

room to move under expansion and contraction. The coefficients of thermal expansion, the extents to which they will expand or contract under temperature changes, are negligible for some refractories, but larger for others.

Expansion joints or areas are therefore needed in some cases. It is necessary to make sure that the material will not take a permanent set, will not "grow" by expanding and then refusing to contract, resulting in warping, buckling, or otherwise damaging value. Sometimes the use of thicker cement joints rather than the customary "thinly buttered" ones may be the answer. Also, in some cases, it may be advisable to use materials of high enough thermal conductivity so that the expanding block or area will not find itself opposed by an area which has not been heated enough to expand or become plastic, hence causing the hot area to buckle.

Gas Penetration. When face portions of structures fall out and appear to be sound although areas within the structure have crumbled, the most probable reason is gas penetration of the refractories. Gases which contain carbon, zinc, alkalis, and some other elements will dissociate within some refractories and deposit these materials within the block. When the structure is cooled and reheated, these deposits volatilize and cause the interior crumbling by their expansion. Many of the better blocks are so compacted that gas penetrates very little, but even this will not help if the cements are such that the gas can penetrate the joints. The damage is greatest, or occurs earliest, if thermal or mechanical shock augments the effects of the gas.

Gas Chemical Attack. Reducing gases in hot furnaces have had effects on some refractories. The effects are especially serious when erosive or abrasive influences are present.

Liquid Penetration. Molten slags or metals can penetrate joints which are poorly made, or where the cement is not resistant or has been weakened by gas penetration. The usual effect is to accelerate the wear of the wall.

Abrasive Action. Dust laden gases moving at high velocity can erode refractory walls. Hot ashes in motion, clinkers which adhere to walls and have to be broken free, have obvious erosive effects. Rapid erosion can be minimized by skill in laying a smooth refractory surface and avoiding exposed edges of blocks or other thin protrusions in-

to which the erosives can "bite". But some refractories are themselves far more resistant to this hazard than are others at given operating temperatures, and the type of cement is also important since an easily eroded joint invites rapid erosion of the contiguous blocks.

Coatings. Some refractories readily coat themselves with slags which are not only protective but also have high emissive values for feeding radiant heat to the load from their heat-storing interiors.

Some of the rammed and castable types can be applied as coatings by the use of trowels or air guns. The coatings then take the abrasive wear, reduce thermal and mechanical shock problems, and can be renewed easily whenever they wear. Where clinker adherence problems are bad, the surface of the coating may be planned to break away with the clinker, and several clinkers may be broken away from the same area before the coating at that point will need renewal. Coatings also can help to protect against gas, slag, and other penetration of the walls.

Effects on Processed Materials. Some refractories have discoloring and other undesirable effects upon materials passed through the furnaces. In other instances, all tendency of the refractories to break, crumble, or spall must be avoided lest the materials in process within the furnaces be contaminated or spoiled. The importance of these points is increasing with the trend toward higher degrees of quality control.

Noise Control. Some gas or oil fired and electrical furnaces have noise characteristics in operation that are bad for worker comfort and for public relations in the plant neighborhood. Some types of refractories—and even more types of insulating materials—have noise absorbing qualities that help to counteract this problem. Noise control, together with the gas and fume control possible in modern refractory structures, often permits such process equipment to be used at locations on production lines where their presence formerly was considered impractical or objectional.

Space and Weight. By careful design of structures and selection of refractories, as well as by the use of insulations, the space and weight needed for structures can often be reduced to the point where it has beneficial effects on the cost of foundations and other building supports, allows furnaces to be placed in locations where—with other materials—the building would be

unable to support them, and frees floor space for other uses.

Precision Types. Some types of refractories may be formed in precision dies to shapes highly useful for electrical products, as porous members of gas furnaces, as filters, and in chemical processing equipment. These products are a field by themselves, and their procurement follows a pattern similar to that of die castings, stampings, or other precision products.

Chemical Resistance. Where chemicals rather than high temperatures, or chemicals in the presence of high temperatures, are the problem, the refractories must be able to resist the chemicals (1) at the necessary temperatures and (2) under such mechanical stresses as may be imposed. For example, where an acid resistant floor is to be laid, the first need is to resist the acid. Materials handling equipment which must traverse the floor can be provided with wide and soft tires to avoid mechanical damage to the floor. But if it can resist the acid *in spite of* being traversed by heavy loads of narrower and harder wheels, then its value may be greater.

The use of chemicals in industry is rapidly increasing, and with it the need for and value of refractories which can resist the chemicals.

Replacements. It is common to replace refractory structures, or to do a major overhaul, after they have withstood five or ten or even more than twenty years of service. The healthy instinct here is to replace them with the same materials and structural designs which already have done so well. But purchase engineering should consider whether improved refractories and structural designs might not be more economical of fuel, floor space, weight, and labor cost, better adapted to mechanization of equipment, sensitivity of process control, worker safety and comfort, good public relations, and processed product quality control.

In spite of the large variety already on the market, the large and constant user of refractories is keeping the producers' research and development departments working hard to find better solutions for his old problems and feasible solutions of new problems. The application engineering of refractories makers is today at the highest point in the age-long history of the industry. All of this new knowledge is available to the smaller user if his purchasing men will study the pertinent factors and enlist the aid of the sales engineers in their consideration.

Graphic Stock Record for Effective Control

By Charles Root

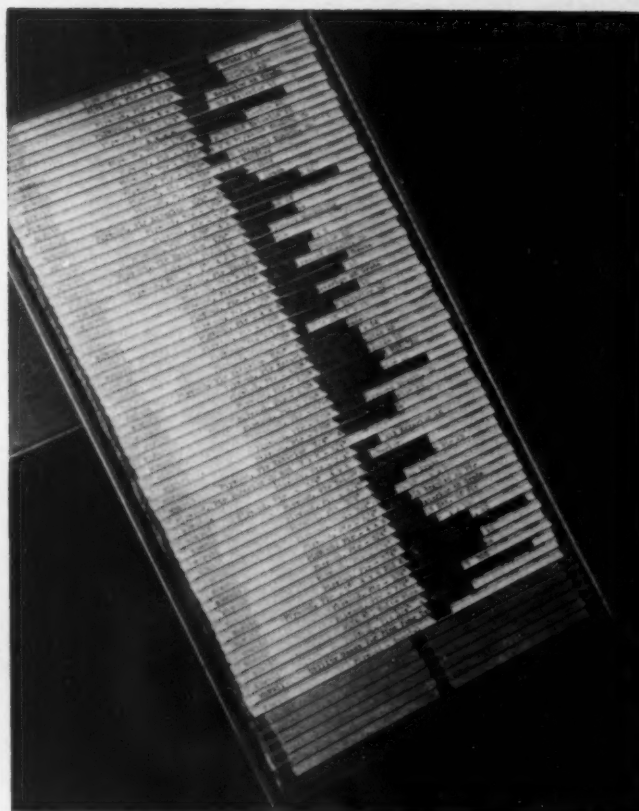
Operations Manager
Capitol City Lumber Co.
Hartford, Conn.

IN recent months, after we had suffered the experience of sitting by with overstocks in many of our millwork, hardware, and paint lines, we came to the conclusion that *count* of stock did not necessarily mean *control* of stock. Now, having set up an adequate inventory control system, we have found, too, that we have something more than inventory control—we have the basic tools for real purchasing and sales control as well.

With the coming of the present emergency, a lot of us in the building materials business have seen some pretty drastic fluctuations, in both directions. We watched the prices of items fall off while we sat around with more stock than we needed to give service to our customers. And we knew that in a matter of months, or weeks, the situation would be just the other way around, and that we would have even greater need for accurate, up-to-the-minute *control* information. Along about that point we lost much of the vagueness in our notion that "count of stock" was inventory control.

We called in the management control specialists of one of the office equipment manufacturers, and put the problem up to them. As the first step in revamping our inventory records, we decided to use a Kardex cabinet and system, with visible index and marginal tab signals. The new record procedure was inaugurated first to handle our millwork supplies controls, in which there are some 3,000 items, 90% of which are active.

Here's the picture of a stock inventory, interpreting the figures in practical terms of coverage, purchasing policy, and critical points demanding immediate attention.



The new procedure merged three control records in one, made for an immediate speed-up in posting and other handling, and provided visible records that actually serve as a chart for effective review and decision.

Records Are Merged

By means of the signalling system, the stock situation on each item is constantly flagged as "normal", "out", "order point", "on order", or "overstock". Since these signals are on the visible margin

of the cards, the entire stock picture is presented at a glance.

We gave the system a work-out in handling the millwork records. When we found what it accomplished in this part of our business, we extended it to take in as well the hardware and paint stock records. Control is thus extended to some 10,000 different items, and all of the required clerical work is now handled by two people, where three were formerly engaged in a much less satisfactory system of stock records.

(Please turn to page 370)

Purchasing from Job Shops

By Thomas A. Dickinson

► H. W. Loud Machine Company has the know-how, but needed funds for special equipment—solved a knotty problem in producing aircraft arresting hooks, makes hydraulic cylinders and other special parts for North American.

Need oxygen equipment for jet-propelled planes? Good buying turns the job over to specialists like the Zep Aero and Breathing Equipment Company.



SINCE few factories are completely self-sufficient in terms of production facilities and requirements, most industrial organizations sometimes find it necessary to buy made-to-order articles or parts from specialized job shops or sub-contractors—a very difficult task, if handled as a non-routine assignment.

However, veteran P. A.'s like

Rulon Nagely of North American Aviation, Inc., Los Angeles, have repeatedly proved that the problems associated with such buying can be solved in an extremely businesslike manner.

Nagely's case is cited in this article, because his department is currently spending more than half of an annual purchasing budget which exceeds \$85,000,000 for job-shop



products in Southern California alone.

The latter assertion is rather astonishing in view of the fact that North American owns some of the most extensive plant facilities west of the Mississippi River; but actually most aircraft manufacturers make extensive use of subcontractors' facilities, even in normal peacetime production work, because a modern all-metal airplane requires thousands of different parts—many of which merit no special

efficiency, North American's purchasing department maintains a material division staff which now comprises 36 buyers who—in addition to interviewing more than 100 salesmen each day—issue purchase orders to firms having:

(1) Facilities for making the necessary parts or assemblies without acquiring additional equipment and buildings (since it would not be practical for most job shops to purchase such facilities for limited production runs).

and management know-how to avoid becoming a burden to the prime contractor.

(6) Plant facilities which are, if possible, reasonably close to the North American factory where the job-shop products will be used.

Most of these requirements are optional in various circumstances. However, experience has shown that the best possible results can be expected when every effort has been made to observe the rules.

Source Near at Hand

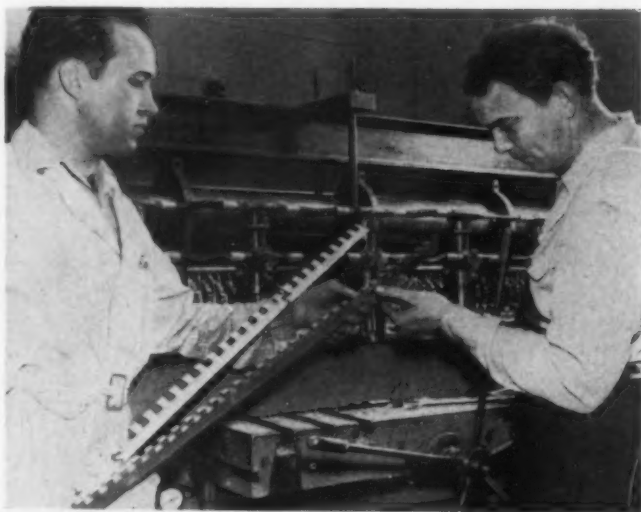
For example, when the company's electromechanical department recently requisitioned a batch of perfectly-round glass balls, a buyer was tempted to waive the proximity requirement by placing an order with a well known Chicago firm—since the requisitioned products necessitated precision craftsmanship of a type that is exceedingly rare in the United States. Nevertheless, the buyer realized that considerable money could be saved in terms of shipping costs alone if he could locate a precision lens-grinding firm in the Los Angeles area.

After making numerous inquiries among local producers of glass products, the buyer decided to visit Waldo Howell's shop at Altadena, Calif. The shop, housed in a one-story frame building, wasn't very impressive; and the firm's only "employee" turned out to be Howell's son Bob. But it was soon obvious that the Howells could produce what the electromechanical department wanted.

So the Howells got a purchase order; and North American, in addition to saving a substantial sum of money, was able to obtain the required glass balls more than a month earlier than might otherwise have been expected.

Needless to say, Nagely's buyers cannot issue 500 purchase orders daily—expending an estimated 40%

Many unusual crafts are used in meeting special requirements. North American buyers found Maurice Griner, skilled in blowing "tailor-made" laboratory glassware needed in the aerophysics department.



Typical of job shop service is the president in coveralls, Jim Thompson (left), President of Utility Tool and Die Manufacturers, Pasadena, inspects hinges which his company produces for North American planes.



Farmer Brothers Coffee Company normally manufactures coffee urns, but has also proved itself a valuable subcontractor for assembling tail cones needed in the famous Sabre fighter planes.

investment in production equipment, due in part to relatively limited quantities of each item needed, but more particularly due to the constant need for engineering changes which will soon cause certain types of parts to become obsolete.

Subcontractor Qualifications

To obtain made-to-order products from other companies with optimum

(2) Sufficient size to handle the work in coordination with North American's master production schedules.

(3) The sort of equipment and trained employees needed to maintain requisite quality standards.

(4) Proved ability to meet schedule requirements at a reasonable cost.

(5) Enough financial stability





Both purchasing and production problems are simplified when components can be procured in the form of completed subassemblies, as in the case of these brake controls made by Gadden Products in nearby Glendale.

of North American's sales dollar for goods and services from other firms—without patronizing major manufacturers such as U. S. Steel, Aluminum Company of America, B. F. Goodrich Chemical Co., etc. However, it is the company's policy to place a substantial portion of the business with smaller manufacturers, and the reasons for this are not strictly altruistic.

Aside from the fact that it is a matter of good public relations to promote the prosperity of neighboring concerns, North American purchasers have learned that in many instances the small factories can quote lower prices and make faster

deliveries—due to relatively low operating costs and usually small backlogs of scheduled orders.

In some circumstances, where it was obvious that certain companies were equipped to handle certain types of work, North American engineers and production men have been effectively used as "expeditors" by providing subcontractors with the know-how they required to do their work. But it is not a one-way street; in other circumstances, subcontractors have solved some very knotty production problems for North American.

Production Problems Solved

A typical event of the latter type was recently encountered when it was necessary to obtain 10-foot arresting hooks for AJ-1 carrier-based bombers. Many metalworking firms could have fabricated the hooks with required materials and dimensions, but government specifications necessitated a heat treatment with which North American personnel were unfamiliar.

Buyers spent many long hours interviewing local subcontractors who couldn't handle the arresting-hook order, and were vaguely beginning to suspect that they might have to patronize some specialist company in England or South Africa when H. W. Loud turned up.

Loud is president of a machine works which bears his name at Pomona, Calif., and he was able to convince North American's technical experts that he could heat-treat the specified arresting hooks if he had the funds required to construct a special oven. As previously explained, North American looks for sources where the required facilities are already available; the company doesn't make it a practice to do

business with subcontractors who lack principal items of equipment, but in this case there was no choice.

Available evidence indicated that even a round-the-world exploration might not disclose a subcontractor who could equal Loud's offer. Besides, North American had a production schedule to maintain; and, assuming that World War II would break out, how could North American be sure that some hypothetical distant subcontractor would be in as good a position as Loud's company in reliably meeting future production requirements?

Recent orders for military aircraft—which soared by a margin of 140% in the 1949-1950 era alone—have naturally forced North American to expand intra-plant production facilities by a substantial margin. But efforts in this connection have been tempered by experience gained since the closing days of World War II.

Expansion Policies

New equipment is purchased if there is good reason to believe that the costs will be amortized, or if there is no other way to maintain production in conformity with government specifications. But efforts to "expand for the sake of expansion"—which characterized many war plant operations during World War II—are being avoided.

Aside from the fact that the company does not wish to acquire extensive facilities, which may have to be disposed of at less than cost if current orders are curtailed, aviation executives in general are inclined to acknowledge the need for industrial decentralization which will minimize the disasters that can be anticipated in the event of an atomic war.

The drop-hammer equipment of Southwest Welding Company becomes a part of North American's production facilities in turning out spherical steel parts.



Nearby plant facilities are preferred sources in subcontracting, but air freight effectively shortens distance and time in the procurement of special parts from more remote producers.



A Check List of Contractors' Costs

By Eugene S. Page, Director of Purchase, Great Lakes Carbon Corp., Chicago

A CONTRACT, as an agreement or "meeting of the minds" between contractor and owner, must be drawn in a manner to define and establish every particular of the intent of the parties. In an Engineering and Construction contract, this involves the most careful and complete consideration of the following:

- I. Parties to the contract
- II. Work to be done
 - A. By owner
 - B. By contractor
(Administrative and engineering work, at office and in field, responsibility for labor and materials, and for specifications and drawings; actual construction work.)
- III. Remuneration
 - A. Lump sum price, and/or
 - B. Variable price, with provisions for:
 - 1. Charges, or
 - 2. Cost-plus, and
 - 3. Contract changes
- IV. Payment
(Partial and final, on basis of invoices, certification, or acceptance.)
- V. General conditions
 - A. Contractual relationships
 - 1. Definitions
 - 2. Correlation of contract documents
 - 3. Separate contracts
 - 4. Subcontracts
 - 5. Termination rights
 - 6. Notices
 - B. Engineering
 - 1. Drawings
 - 2. Changes
 - C. Worksite
 - 1. Contractor's understanding
 - 2. Responsibility for connecting work
 - 3. Permits, licenses, and regulations
 - 4. Use of premises
 - 5. Cleaning up
- D. Quality
 - 1. Materials
 - 2. Workmanship
 - 3. Guarantees
 - 4. Inspection
- E. Protection
 - 1. Contractor's liability
 - 2. Insurance
 - 3. Mechanics' liens
 - 4. Patents
 - 5. Performance and payment bonds
- F. Prices and terms
 - 1. Transportation charges
 - 2. Segregation of costs
 - 3. Taxes

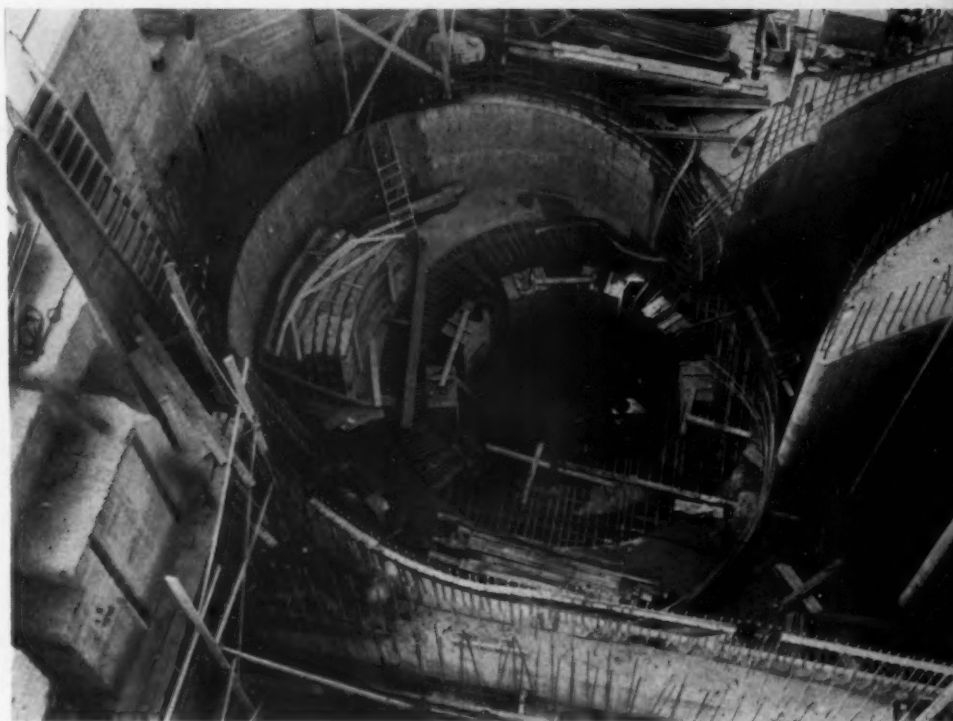


TABLE I. ACCUMULATION OF CONTRACTOR'S COSTS

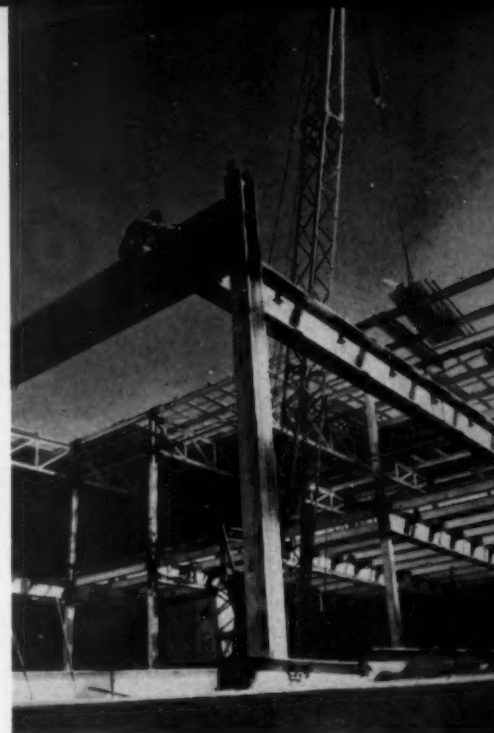
Class and Reference	Cost Number	Class and Reference	Cost Number
ADMINISTRATORS AND EXECUTIVES		MATERIAL—Continued	
A-1 For engineering services.		J-2 Long distance communication.	43
A-2 For procurement, accounting and construction services.		K-1 Procurement and accounting. Costs to Contractor for materials and supplies used in Contractor's main and district offices by labor listed in reference (F).	24
Salaries and wages paid to the business administrators and executives for the general conduct of Contractor's business, regardless of whether or not their efforts are directed toward the work to be performed for the Owner, including:	1	K-2 Long distance communication.	43
All contributions measured by salaries and wages.	6	L Capital items. Net costs to Contractor for all machinery, equipment, materials and supplies furnished by the Contractor to be incorporated in the work.	21 22
Effective increase in salaries and wages caused by vacations, holidays, and sick leave.	7	M Net costs to Contractor for all expendable items furnished to the field and/or job site, including:	
All other employee benefits.	8	Job office and temporary buildings.	45
ENGINEERING		General materials and supplies, including:	24
B Salaries and wages paid to supervisory and working engineers and their assistants, and to skilled, unskilled, and clerical labor performed for engineering purposes, in Contractor's main and district offices, for the exact time each such employee devotes toward performing engineering work for the Owner, including:	2 3 4 5	Fuel for heat and power.	24
All contributions measured by salaries and wages.	6	Utilities, including electricity and water.	27
C Effective increase in salaries and wages of all employees in reference (B), caused by vacations, holidays, sick leave, and all other employee benefits.	7 8	Repair parts for equipment rentals.	26
D Actual cost to the Contractor for traveling and living expenses (and for automobile mileage at a predetermined rate per mile) incurred by Contractor's employees in reference (B), in the field or at job site, away from Contractor's main and district offices, in performance of work for Owner.	9 10	N Net costs to Contractor for small tools furnished to the field and/or job site.	25
E Actual cost to the Contractor for consultants, if any, employed in performance of the work.	41	O Net costs to Contractor for all rentals in field and/or at job site, including rental of:	
PROCUREMENT AND ACCOUNTING		Working space.	28
F Salaries and wages paid to supervisory executives and their assistants, and to skilled, unskilled, and clerical labor (not including labor performed for engineering purposes) in Contractor's main and district offices, for the exact time each such employee devotes toward performing work for the Owner, including:	2 3 4 5	Storage space.	29
All contributions measured by salaries and wages.	6	Equipment.	30
Effective increase in salaries and wages caused by vacations, holidays, and sick leave.	7	Large tools.	31
All other employee benefits.	8	(Note: Equipment and tools furnished by Contractor to be charged to Owner at predetermined rental rates.)	
G Actual cost to the Contractor for traveling and living expenses (and for automobile mileage at a predetermined rate per mile) incurred by Contractor's employees in reference (F), in the field or at job site, away from Contractor's main and district offices, in performance of work for Owner.	9 10	P Net costs to Contractor for transportation to field and/or job site of all equipment and materials listed in references (I through N), including unloading in field or at job site, loading, and return transportation on rental equipment and tools.	32
FIELD LABOR		Q Net costs to Contractor for other items of a "Material" nature, specifically:	
H Salaries and wages paid to supervisory executives and their assistants, and to skilled, unskilled, and clerical labor in the field and/or at job site, for all time devoted toward performance of work for the Owner, including:	2 3 4 5	Sale and use taxes.	33
All contributions measured by salaries and wages.	6	Insurance premiums.	34
Effective increase in salaries and wages caused by vacations, holidays, and sick leave.	7	Performance bonds.	35
All other employee benefits.	8	Permits.	36
I Other costs to Contractor for labor employed in the field and/or at job site in performance of work for the Owner, specifically:		GENERAL COSTS	
Subsistence and expense.	11	R Net costs to Contractor for all subcontracts.	41
Labor procurement.	12	S-1 For engineering services.	
Transportation.	13	S-2 For procurement, accounting and construction services.	
Housing facilities.	14	All other direct costs to Contractor, not otherwise included herein, incurred in performance of work for Owner, including:	
MATERIAL		Labor.	15
J-1 Engineering material. Costs to Contractor for tracing paper, prints of drawings, and other supplies required in Contractor's main and district offices by the engineering forces listed in reference (B) in performance of engineering services for the Owner.	23 24	Material.	37
		All other.	42
		T-1 For engineering services.	
		T-2 For procurement, accounting and construction services.	
		All other costs to the Contractor which are definitely "Overhead" items, including:	46
		Rental of main office working space.	28
		Maintenance of office, plant and equipment.	
		Heat, light, and local telephone.	44
		Depreciation.	
		Corporate taxes.	
		U All direct costs to the Contractor, not specifically named and identified herein, authorized and approved in each instance by Owner.	50

**TABLE II. SUMMARY ANALYSIS OF COST FACTORS
MAKING UP THE CONTRACT PRICE**

GROUP	SUBJECT	REFERENCE	COST NUMBERS
I	Engineering	B, C, D, E, J-1, J-2	2, 3, 4, 5, 6, 7, 8, 9, 10, 23, 24, 41, 43
II	Procurement & Accounting	F, G, K-1, K-2	2, 3, 4, 5, 6, 7, 8, 9, 10, 24, 43
III	Field Labor	H, I	2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 14
IV	Material	L, M, N, O, P, Q	21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 45
V	Subcontracts	R	41
VI	All Other Direct Costs	S-2, U	15, 37, 42, 50
VII	Overhead	A-2, T-2	1, 6, 7, 8, 28, 44, 46

Total of Contractor's costs: Sum of all costs in Groups I through VIII.

TOTAL CONTRACT PRICE: Total of Contractor's costs, plus profit.



4. Payments

VI. Time

A. Start

B. Work schedule

C. Completion

In this discussion, we are particularly concerned with that part of every contract which established the total amount of remuneration or "contract price" which the contractor shall be paid. There are innumerable different ways in which this may be defined and finally determined. All of these ways, however, including even a lump sum price, are formulated upon either

known or estimated contractor's costs, or a combination of the two. The purchasing agent, as his company's contracting officer, must know these detailed costs as the basis of remuneration and to satisfy himself that he is securing value. He must know, for example:

What are the contractor's costs of every kind and description, for which he shall be reimbursed?

How are these costs defined, classified, and grouped?

How is the amount of every cost determined?

How shall the total amount or

contract price to be paid to the contractor be determined from these cost factors?

Itemized Cost Factors

As a beginning, let us itemize and list all of the cost factors to be considered, under the general heading of labor, material, and general costs. The complete list is numbered consecutively, to identify each item for subsequent reference and correlation. (For convenience, numbers 1 through 20 are assigned to labor cost items, 21 through 40 to materials, the 40 series to general costs, and 50 to additional direct costs; consequently there are some gaps in the sequence, which might be used for special items within the respective classifications. In addition, a symbol is given following each item to indicate how it is to be classified or distributed to (a) direct or (b) indirect costs in main or district office operations (c) direct or (d) indirect costs in field operations.

Labor

Salaried

1. Administrative and executive (a, b)
2. Supervisory (a, b, c)
3. Clerical (a, b, c)

Hourly wage

4. Skilled (a, b, c)
5. Unskilled (a, b, c)

Services

6. All contributions measured by salaries or wages (a, b, c)





7. Effective increase in salaries and wages caused by vacations holidays, and sick leave (a, b, c)
8. All other employee benefits (a, b, c)
9. Automobile mileage (a)
10. Travel expense (a)
11. Subsistence and expense (c)
12. Procurement of labor (c)
13. Transportation of labor (c)
14. Housing facilities (c)

Other

15. All other (a, c)

Material

Incorporated in work

21. Capital items (c)
22. Other material (c)

Expendable

23. Drawings and prints (a, c)
24. Supplies (c)
25. Small tools (c)
26. Repair parts for rentals (c)
27. Utilities (c)

Rental

28. Working space (b, c)
29. Storage space (c)
30. Equipment (c)
31. Tools (c)

Transportation

32. All, including unloading and loading in field (c)

All other material costs

33. Sale and use taxes (c)
34. Insurance (c)
35. Performance bond (c)
36. Permits (c)
37. All other (a, c)

General Costs

Subcontracts

41. All (a)

Other direct costs

42. All other direct costs to contractor, not otherwise included herein, incurred in performance of work for the owner. (a, c)

Business costs

43. Long distance communication (a, b, c)
44. Local communication (b, c)
45. Job office communication (c)

Other indirect costs

46. All "overhead" costs to the contractor not specifically named and identified herein (b, d)

Additional direct costs

50. All direct costs to the contractor not specifically named and identified herein, to be specifically authorized and approved in each instance by the owner (a, c)

Such costs include (but are not limited to: advertising and sales expense; employee personal expense; entertainment and gratuities; legal expense; royalty payments; customs duties; damages, not compensated by insurance, except when caused by negligence of contractor.

Accumulation of Costs

The itemized costs listed above provide the basic data included in the contractor's expenses, upon which his contract price or estimate is based, or becoming the basis of reimbursement in the case of a cost-plus-fee contract arrangement. However, this mass of essential detail must be allocated and organized to be properly evaluated and ac-

counted for. The purchasing agent, as well as the contractor, will wish to have the specific costs grouped and summarized in a half-dozen or so major categories covering different phases of the work, not only because this gives a more clear and revealing picture of the over-all job, but also because these different classifications may be handled somewhat differently in accounting and remuneration.

Logical Tabulation

For example, the tabulation could logically be set up under seven headings, as follows:

- I. Engineering costs
- II. Procurement and accounting costs
- III. Field lab costs
- IV. Material costs
- V. Subcontracts
- VI. Other direct costs
- VII. Overhead

This arrangement is shown in Table II. But before this can be done, the costs must be accumulated from the basic data under appropriate subtotals for distribution to the respective cost groups. How this is accomplished is shown in Table I, indicating the several account references and the "cost numbers" from which the detailed information is drawn.

When this is done, the contractor officer is in a position to analyze and evaluate the cost components entering into the completed job, to have an accurate knowledge of the contractor's costs and how they were determined, and to calculate and check total contract price on whatever basis of remuneration is provided for in the contract.



Trend of Business
As Seen In Current
News & Statistics

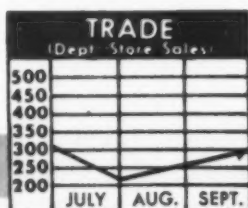
Where We Stand



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index.....1935-1939=100	218	213	213	209	+ 2.3	+ 4.3
Steel Production (Weekly).....000 net tons	2,023	2,029	2,029	1,936	- 0.3	+ 4.5
Electric Power Production (Weekly).....mil KWH	6,795	7,070	7,070	6,029	- 3.8	+12.7
Bituminous Coal Production (Weekly).....000 net tons	9,240	10,180	10,180	10,173	- 9.3	- 9.2
Auto, Truck & Bus Output (Weekly).....units	97,797	94,893	94,893	144,271	+ 3.0	-32.2
Petroleum Output (Weekly).....000 bbls.	6,199	6,151	6,151	5,839	+ 0.7	- 6.2



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
All Commodities (BLS).....1926=100	176.8	177.4	177.4	169.7	- 0.3	+ 4.5
Farm Products.....1926=100	189.7	190.9	190.9	181.3	- 0.6	+ 4.6
Metals & Metal Products.....1926=100	188.2	188.1	188.1	177.1	0	+ 6.2
Building Materials.....1926=100	222.2	223.6	223.6	219.7	- 0.6	+ 1.1
Steel Billets (Pittsburgh).....net ton	\$56.00	\$56.00	\$56.00	\$53.00	0	+ 5.3
Steel Scrap, heavy melting, Pitts.....ton	44.00	44.00	44.00	43.75	0	+ 2.7
Copper, electrolytic.....lb.	.241½	.241½	.241½	.241½	0	0
Rubber (rib-smoked sheets).....lb.	.52	.52	.52	.58	0	-10.3
Wheat, No. 2.....bu.	2.703⅞	2.643⅞	2.643⅞	2.507⅞	+ 2.2	+ 7.7



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Dept. Stores Sales Index (Fed. Res.).....1935-39=100	289	251	251	295	+15.1	- 2.0
Commercial Failures (Dun & Bradstreet)....no.	116	149	149	145	-22.0	-20.0
Freight Carloadings.....cars	732,908	809,354	809,354	751,449	- 9.4	- 2.5

FINANCE

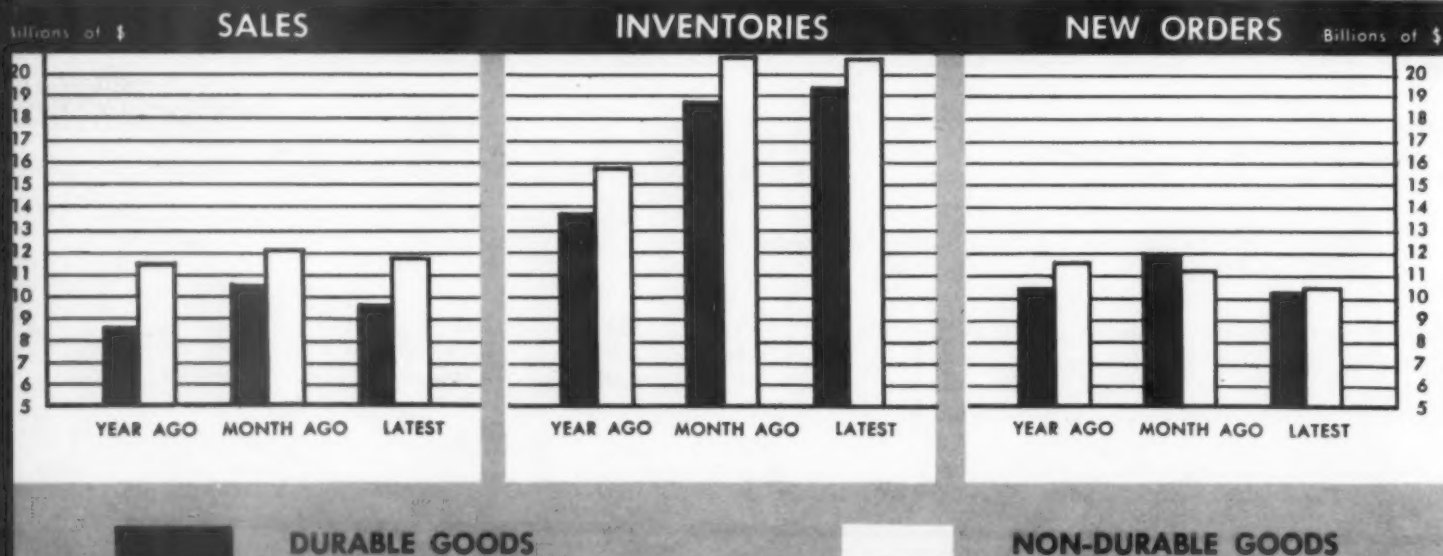
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Stock Prices (Standard & Poor's).....1926=100	188.2	181.6	181.6	151.6	+ 3.6	-24.1
Bank Clearings (New York).....mil \$	7,874	7,387	7,387	8,144	+ 6.5	- 3.3
Federal Reserve Credit.....mil \$	24,384	24,360	24,360	19,365	+ 0.1	+25.9
Currency in Circulation.....mil \$	28,216	27,925	27,925	27,151	+ 1.0	+ 3.9

MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

Value of Manufacturers' Sales Seasonally Adjusted (Millions of Dollars)	1930	1931				
	July	February	April	May	June	July
All Manufacturing	20,269	22,646	22,389	23,838	22,758	21,615
Durable goods	8,670	10,338	10,532	11,077	10,660	9,748
Iron and Steel	2,178	2,642	2,703	2,823	2,705	2,490
Nonferrous metals	558	584	594	582	594	581
Electrical machinery	924	1,254	1,158	1,246	1,199	1,011
General machinery (exc. elec.)	1,374	1,802	1,925	2,004	1,992	1,916
Motor vehicles & equipment	1,459	1,550	1,508	1,610	1,438	1,197
Transportation equipment (exc. motor vehicles)	315	415	475	502	485	332
Lumber and timber products	603	586	674	698	750	608
Furniture & finished lumber products	409	454	480	515	465	403
Stone, clay & glass products	469	587	538	626	591	543
Nondurable goods	11,599	12,309	11,857	12,762	12,099	11,867
Food and kindred products	3,243	3,297	3,326	3,825	3,420	3,122
Beverages	573	427	414	488	501	493
Tobacco products	287	300	280	296	283	291
Textile-mill products	1,206	1,407	1,270	1,386	1,303	1,241
Apparel	962	882	670	670	620	809
Leather and products	349	365	284	280	292	302
Paper and allied products	528	686	673	700	678	632
Printing and publishing	596	731	716	728	723	698
Chemicals and allied products	1,442	1,631	1,631	1,736	1,684	1,679
Petroleum and coal products	1,738	1,795	1,842	1,867	1,863	1,892
Rubber products	454	435	441	436	437	n.a.
Book Value of Manufacturers' Inventories Seasonally Adjusted (Millions of Dollars)						
All Manufacturing	29,830	35,474	37,849	38,939	39,937	40,406
Durable goods	13,888	16,660	17,601	18,304	18,978	19,476
Iron and steel	3,147	3,532	3,608	3,727	3,862	3,968
Nonferrous metals	973	1,016	1,031	1,041	1,090	1,069
Electrical machinery	1,633	2,032	2,206	2,331	2,460	2,562
General machinery (exc. elec.)	3,208	3,932	4,203	4,350	4,482	4,585
Motor vehicles & equipment	1,803	2,232	2,348	2,397	2,444	2,517
Transportation equip. (except motor vehicles)	460	1,012	1,168	1,261	1,372	1,450
Lumber and timber products	576	672	717	745	762	761
Furniture & finished lumber products	675	820	837	888	889	893
Stone, clay & glass products	542	626	686	706	747	783
Nondurable goods	15,942	18,814	20,248	20,635	20,979	20,930
Food and kindred products	2,831	3,435	3,928	3,966	3,935	3,694
Beverages	1,037	1,202	1,283	1,283	1,284	1,230
Tobacco products	1,467	1,642	1,682	1,705	1,693	1,708
Textile-mill products	2,274	3,046	3,262	3,351	3,489	3,506
Apparel	1,448	1,768	1,893	1,898	1,882	1,905
Leather and products	568	598	644	666	684	645
Paper and allied products	695	791	873	891	925	951
Printing and publishing	601	710	732	753	766	775
Chemicals and allied products	2,041	2,424	2,617	2,687	2,756	2,852
Petroleum and coal products	2,046	2,133	2,230	2,295	2,353	2,437
Rubber products	501	557	566	585	612	n.a.
Manufacturers' New Orders (Unadjusted)						
All Manufacturing	22,223	25,403	23,927	23,318	23,234	20,967
Durable Goods	10,553	13,153	12,614	11,773	12,018	10,413
Non-Durable Goods	11,670	12,250	11,313	11,545	11,216	10,553

*estimated p — preliminary n.a. — not available

SALES, INVENTORIES AND NEW ORDERS



PRODUCT DELIVERY INFORMATION

CHEMICALS: The trend has been toward the elimination of chemicals from priority controls, with one chemical product after another being dropped from the controlled lines, states the Monsanto Chemical Co. in report to the plastics industry. "A study of the situation indicates that in the very near future, all chemicals will be removed from rated classifications and priority control, including CMP." Monsanto foresees early return of chemicals to industry allocation.

Rubber: In talk at the Sales Executive Club of Cleveland, Joseph A. Hoban, tire merchandising, B. F. Goodrich company, declared that "Postponed for a year by crisis in the Far East, hard selling days are about to return to the rubber industry" — that "production is catching up with demand."

Machine Tools: Manufacturer of varied line of machine tools states that deliveries, both priority and non-priority, vary from six months to three years, depending upon type of machine involved.

Deliveries under CMP: "Out of chaos into confusion seems to be the trend of the CMP, a trend that will continue well into the first quarter of 1952", reports an Eastern Purchasing Agent. "Delivery of products, whether standard or special is indefinite. Delivery, with lag time for government approval, runs anywhere from 10 to 14 weeks with brass mills. Polished plate glass deliveries are running seven months after receipt of purchase order."

Lead time on various products indicated in this report is range of delivery time reported by several manufacturers of identical products.

	STANDARD Products	SPECIAL Products	D.O. Orders
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ABRASIVES			
Grinding wheels, bonded products	Stock	2-8 wks	1-8 wks
Abrasive grain	Stock	4-16 wks	
Coated products	Stock	3 wks	

ABRASIVE FINISHING MACHINES			
Belt finishing machines	4 wks		4 wks
12" disc finishing	9 wks		9 wks
8½" disc sanders	4 wks		4 wks
Cut-off machines	4 wks		4 wks

ADHESIVES			
Adhesives	Stock	2 wks	Stock

ALLOYS, STEEL			
HR alloy bars	21 wks	21 wks	21 wks
CO alloy bars	26 wks	26 wks	26 wks
Carbon tube rounds	30 wks	30 wks	30 wks

BEARINGS			
Ball bearings (dep. on size)	26-52 wks		
Carbon steel balls (dep. on size)	2-6 wks		
Needle bearings	18 wks	14-24 wks	8-24 wks
Self lubricating	6 wks	10 wks	6-10 wks
Tapered roller (dep. on size)	24-26 wks	24-50 wks	

BELTING, Conveyor (See Materials Handling)

BOXES			
Folding (no printing)		6 wks	3 wks
Folding — printed	4 wks	6 wks	3 wks
Easy boxes	4 wks	6 wks	3 wks
Folding cartons		6 wks	4 wks
Candy boxes	4 wks	8 wks	4 wks
Metal boxes (Spare parts)	5 wks		4 wks
Corrugated boxes		3 wks	1 wk
Solid fibre boxes		4 wks	2 wks

BRASS			
Sheet	Indefinite		8-11 wks
Rod	Indefinite		11 wks
Wire	Indefinite		11 wks

BRUSHES			
Industrial floor brushes	5 wks		3 wks
Wire Scraper	6-8 wks		

BRINGS			
Bricks	22 wks	6-8 wks	6 wks

	STANDARD Products	SPECIAL Products	D.O. Orders
CASTERS			
Casters and Wheels	4-16 wks	4-20 wks	3-12 wks

CASTINGS			
Iron	9-12 wks		
Aluminum	9 wks		

CHAIN			
Hardware	Prompt to 24 wks	4-24 wks	Prompt to 24
Tire	6 wks	6 wks	Prompt
Roller	Stk to 24 wks	12-36 wks	Stk to 12 wks
Silent	Stk to 8 wks	8-12 wks	Stk to 8 wks
Steel	10 to 12 wks		8 to 10 wks
Beaded	4wks	Indef.	4 wks

CHEMICALS			
Soda Ash (Contract)	Reasonably prompt		
Caustic Soda, liq.	Reasonably prompt		
Caustic Soda, dry	Prompt		
Chlorine	Indefinite		
Ammonium Chloride	Prompt		
Caustic Potash, dry	Prompt		
Caustic Potash, liq.	10 days		
Sodium Nitrite	Prompt		
Paradichlorobenzene	2 wks		
Methanol	1 wk		
Calcium Chloride	Prompt		

COATINGS			
Protective Coatings	2-8 wks	4-8 wks	1-2 wks
Unrated Titanated pigment and standard	6-8 wks		

CONTAINERS			
Containers (Can)	3-4 wks	9 wks	
Stampings (Can)	6 wks	9 wks	2-3 wks
Misc. (Can)	2-4 wks		3-4 wks
Wood cleated fibre shooks		4 wks	4 wks
Food pails, wire handles	4 wks	6 wks	3 wks
Wooden boxes		6 wks	4 wks
Wooden box shooks		6 wks	4 wks
Corrugated Boxes		3 wks	1 wk
Solid Fibre Boxes		4 wks	1 wk
Corrugated cans	16-20 wks		7-9 wks
Cylindrical Paper Tubes & Containers		3-4 wks	
Wirebound Boxes & Crates	3 wks (Oct.)		

COUPLINGS			
Flexible couplings	Stk-8 wks	8 wks	6 wks

CLUTCHES			
Clutches, over-running	3-12 wks	12 wks	6 wks
Friction	Stk-8 wks	12 wks	6 wks

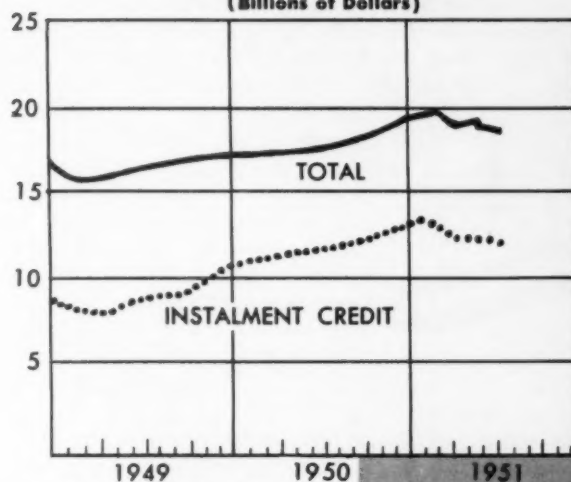
PRODUCT DELIVERY INFORMATION continued

	STANDARD Products	SPECIAL Products	D.O. Orders
CRANES			
Traveling lift	38-40 wks	28-30 wks	28-30 wks
DIE CASTINGS			
Zinc base	7-9 wks	9 wks	4-5 wks
Aluminum	8-11 wks	9 wks	5-7 wks
Tools, Dies, etc.	18-20 wks	18 wks	10-12 wks
ELECTRICAL			
Motors (rated orders)	18-28 wks	20-30 wks	
Motors (unrated, non-priority)	Indefinite		
Geared motors	Stock	4-8 wks	
Variable speed drives	3 wks		
Rigid Conduit	30 wks		4 wks
ABC Cable (BX)	39 wks	6 wks	4 wks
Loomwire	17 wks		4 wks
Bldg. wire	26 wks	22 wks	6 wks
Outlet boxes and connectors	22 wks		4 wks
Electrical Motor Controls	16 wks	20-30 wks	12-30 wks
Transformers, Specialty		13-52 wks	
ELECTRONIC TUBES			
Receiving types	1-12 wks	Indef.	1-26 wks
Television picture	1 wk	8-10 wks	1-4 wks
I & T types	1-50 wks	Indef.	1-50 wks
ENGINES			
Single cyl. gas. engines	12-15 wks	20-30 wks	10-15 wks
FASTENERS			
Cotter pins	2-3 wks	8-12 wks	2-3 wks
Rivets, tubular	2-4 wks	4-6 wks	2-4 wks
Rivets, split	4 wks	4-6 wks	4 wks
Rivets, Solid Steel	12 wks	6-14 wks	12 wks
Washers	2 wks	10 wks	2 wks
Lockwashers	2 wks	9 wks	2 wks
Self-locking nuts	8-70 wks	12-30 wks	8-70 wks
Bolts and screws	Stk-52 wks	4-52 wks	4-30 wks
Machine screw nuts	17-26 wks	Indef.	
FIBRE PRODUCTS			
Vulcanized, .010-3/32"	26 wks	34 wks	13 wks
Phenol fibre	8-10 wks	10 wks	6 wks
FIRE PROTECTION			
Methyl Chloride	1 wk	2 wks	1 wk
Sulphur Dioxide	1 wk	1 wk	1 wk
Dry Chemical Extinguishers	3 wks	5-9 wks	2 wks
Built-in systems, CO ₂	4 wks	12-20 wks	3 wks
Portable extinguishers CO ₂	2 wks	20 wks	1 wk
Wet chemical extinguishers	2 wks		1 wk
Aircraft systems	24 wks	24-30 wks	24 wks
FITTINGS			
Welding Fittings	Stk. to 14 wks	22 wks	Stk. to 14 wks
Flanges	Stk. to 14 wks	22 wks	Stk. to 14 wks
FORGINGS			
Large	26 wks	26-52 wks	
FOUNDRY			
Riddles	2 wks	3 wks	2 wks
Sieves, Flour	3 wks	6-8 wks	2-5 wks
GEARS			
CI & CS cut & cast tooth	9 wks		7 wks
HEAT TREATING EQUIPMENT (Nickel alloy) (Muffles, retorts, baskets, trays etc.)			
Stock material	6-8 wks		
Mill material	17-26 wks		
HOISTS			
Heavy Lift	20-24 wks	20-24 wks	20-24 wks
Hoists	Stk. to 13 wks	Stk. to 13 wks	Stk. to 13 wks
INSULATION			
Mineral wool	2 wks	4 wks	1 wk
MACHINE TOOLS			
Drill presses, 17", SS	13 wks		6 wks
Drill presses, 17", M4 etc	6 wks		6 wks
Drill presses, 14", SS	13 wks		6 wks
Drill presses, 14", MS etc	6 wks		4-6 wk s
Grinders	9 wks	17 wks	4 wks
Hydraulic presses	46-52 wks		
MATERIAL HANDLING EQUIPMENT (Also see Trucks)			
Monorail trackage	12-16 wks	16-20 wks	
Cranes, bridges (motor)	26-30 wks	32-36 wks	
Hoists, elec., hand	14-18 wks		
Hoists, motor propelled	18-20 wks		
Belting, conveyor, elevator, Stk. to 12 wks			

	STANDARD Products	SPECIAL Products	D.O. Orders
OFFICE EQUIPMENT			
Lithostrip, Lithosets, Lithofold	12-20 wks		
PIPE			
Wood lined pipe	3-6 wks		4 wks
Saran lined pipe	6 wks		4 wks
Saran tubing	Stock	4-6 wks	
Saran fittings	Stock	4-6 wks	
PIPE, STAINLESS			
S S and Monel pipe	13 wks		6 wks
S S and Monel fittings	13 wks		6 wks
PIPING, FABRICATED			
Fabricated	13 wks	26 wks	
Up to 500 tons		4 wks	Preference
Up to 300 tons		75 tons per mo	Preference
PLASTICS			
Spl. molded (tooling on hand)	8-10 wks		
Construction-sampling new molds	8-12 wks (dep. on size)		
POWDERED METAL			
Parts (custom fabricated)	4 wks		
PULLEYS			
Cast iron	12 wks		9 wks
Welded steel	8 wks		6 wks
PUMPS			
Single Stage 10" & Below	14 wks	22-35 wks	14-35 wks
12"-16"	18-35 wks	27-40 wks	18-40 wks
18" and above	27-45 wks	36-50 wks	22-50 wks
Multistage Standard	18-52 wks	31-52 wks	18-52 wks
Special Multistage	52-65 wks	65-80 wks	52-80 wks
Turbine pumps	3-6 wks	10-12 wks	3-10 wks
Centrifugal:			
Close Coupled	3-4 wks	16-45 wks	3-45 wks
Standard End Suction	10-12 wks	18 wks	10-18 wks
Chemical	12-18 wks	20 wks	12-20 wks
Double Suction to 6"	14 wks	20 wks	14-20 wks
Double Suction 8"-16"	35 wks	40 wks	35-40 wks
Double Suction 18" and Above	35-45 wks	50 wks	35-50 wks
2 to 4 stage Split Case	35-45 wks	50 wks	35-50 wks
Other Split Case	52 wks	60 wks	52-60 wks
Forged Barrel	65 wks	80 wks	65-80 wks
Special & Vertical	52-65 wks	80 wks	52-80 wks
Regenerative Turbine	3-4 wks	10-45 wks	3-45 wks
Process Pumps	30 wks	50 wks	30-50 wks
RUBBER PRODUCTS			
Cellular rubber	2-3 wks	5-6 wks	1-2 wks
Silicone rubber	8-12 wks	8-12 wks	8-12 wks
Foam latex rubber	2-3 wks	4-5 wks	1-2 wks
Rubberized Hair, Wool	4-5 wks	4-5 wks	1-2 wks
SAWS			
Hack saws	4-17 wks	4-26 wks	2-9 wks
Gas chain saws	3 wks	9 wks	2-3 wks
SCREW MACHINE PRODUCTS			
Screw Machine parts	13 wks		
SHELVING, ETC.			
Steel Shelving	60 wks		15 wks
Steel Lockers	56 wks		12 wks
Steel Shop Equipment	60 wks		2-12 wks
SPRINGS			
Springs	13 wks	8-10 wks	6-8 wks
Cold rolled spring steel	17 wks		17 wks
SPROCKETS			
Sprockets	Stk to 9 wks	9 wks	Stk to 5 wks
Silent chain	Stk to 9 wks	9 wks	Stk to 6 wks
Woodruff keys	Stock	9 wks	Stk to 9 wks
STAPLING MACHINES			
Machines	4-8 wks		
Staples	Stock		
STEEL			
Bars and billets	15-26 wks		
Plates and sheets	15-21 wks		
Nails	13 wks	13 wks	7 wks
Fence	13 wks	13 wks	7 wks
Barb wire	13 wks	13 wks	7 wks
Steel posts	13 wks	13 wks	7 v.
Strapping	6-8 wks		2 wks
STORAGE BATTERIES			
Automotive	1-3 wks		1 wk
Industrial	8-16 wks		6-12 wks

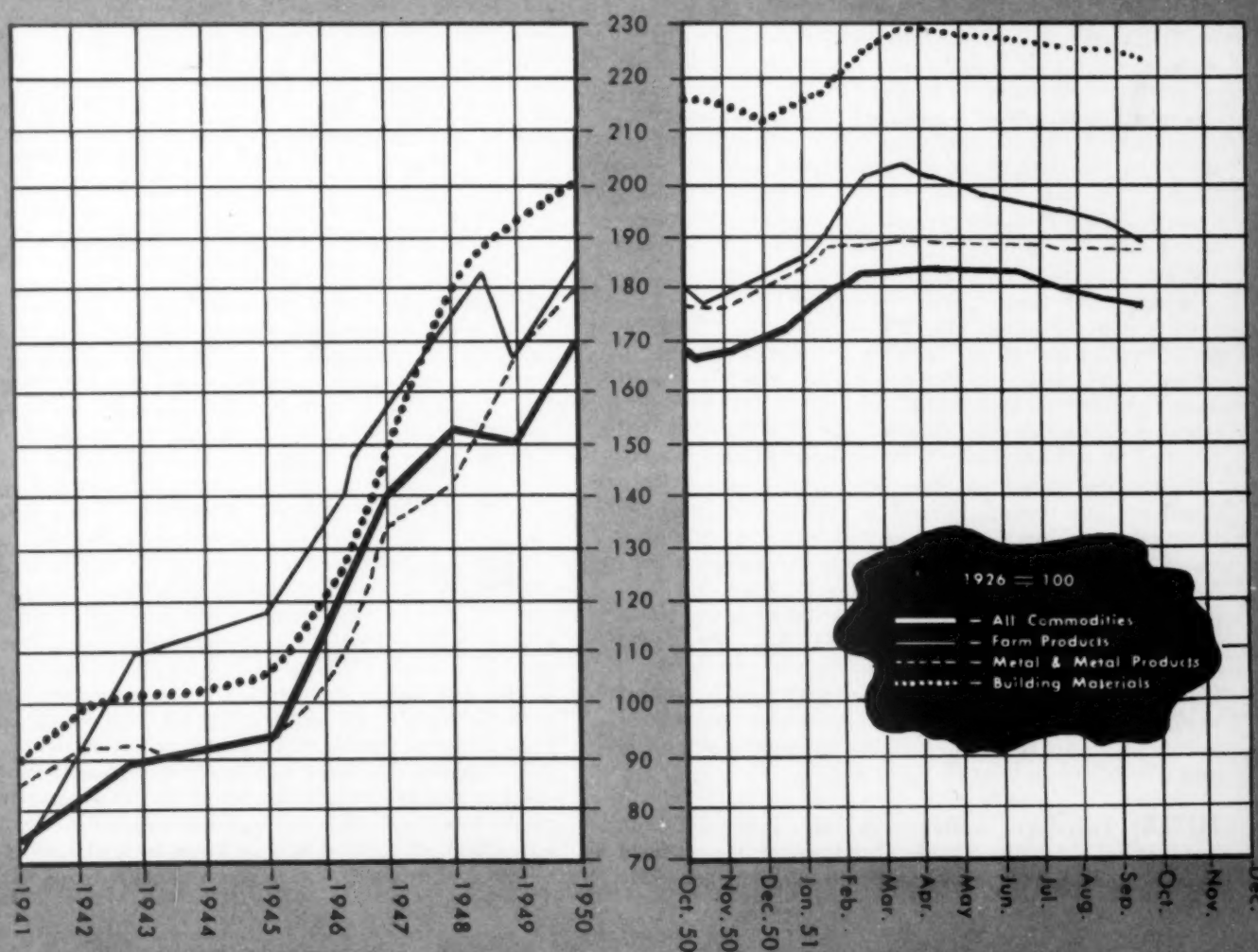
Basic statistics in these pages indicate that we may be making the turn—but slowly. Industrial production has started back up again, and the rate of manufacturers' inventory accumulation has slowed. The Office of Business Economics points out that the rise for the month in inventories was concentrated in the working stocks of durable-goods industries. "There was but little change in finished-goods inventories in contrast to the sharp late spring and early summer piling up of shipping stocks." Personal income has been climbing about one billion a month since April, in contrast to the 3 billion a month in the nine months previous. It is expected that the rate will rise again if the industrial production continues to go ahead. Employment and wages are still relatively high.

CONSUMER CREDIT (Billions of Dollars)



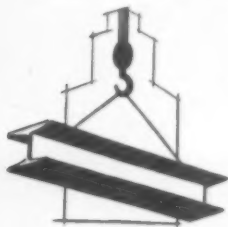
Source: Federal Reserve Board

THE PRICE PICTURE



MATERIALS AND MARKETS

STEEL: Mobilization Director Wilson's "shock" at the steel production prospects for this winter had observers wondering. Steel production has been reaching record heights — output of raw steel in August was 8,722,000 tons, the highest yet for any similar month — and expansion plans are going ahead rapidly. Many trade observers are predicting that supply and demand of steel will come into balance by the middle of next year. Offered as evidence that there has been a great deal of over-ordering on steel was the release of 20,330,000 pounds of stainless steel



for automobile and household appliance manufacturers — 7% of the country's supply for the third quarter. This time it was the military who had ordered too much. Overall demand was still heavy however, and steel users had an additional worry with which to contend. The new super-priority — DX — was taken by many as an indication that C.M.P. is not working out as well as expected, and that adding priorities is a start toward breakdown of the whole system.

NON-FERROUS METALS: Copper users, bedeviled by strikes at western smelting plants and at Chilean docks, saw supplies getting tighter and tighter. With 30,000 tons production lost, the U.S. strikers are back at work under an 80-day injunction. The Chileans have also gone back to work, and shipping is under way again. This big bite out of production is going to be felt strongly by fabricators this month. Some relief is expected from the Government, which is said to be contemplating making stockpile copper available, or cutting allocations under C.M.P. Some quarters feel that both actions may be taken. Anything taken from the stockpile will have to be returned eventually, making the outlook for copper pretty grim for some months to come.

Agreement between United States and Bolivia over tin pricing is in the offing. The RFC is now buying Bolivian tin at \$1.12 a pound, although the price to domestic consumers is still \$1.03. As this was written, new discussions were supposed to be getting under way between representatives of the two countries, with the Bolivian producers reported as seeking a new price of about \$1.50 a pound.

Just as the Aluminum Association reported that additional capacity recently placed in operation enabled the U.S. primary aluminum industry to increase its output about 8% in July, an electric power breakdown in the Northwest threatened production there. Half the aluminum produced in this country comes from that area, and losses by the three big producers were said to be running to several hundred thousand pounds each per week... Canadian producers of lead and zinc were reported at this writing to be withdrawing from the American market until ceiling prices are raised. This source provides about 5,000 tons a month of each metal.

FUELS: Fears of shortages in oil — particularly in residual oil — because of the shutdown of the Abadan refinery in Iran have subsided somewhat. The immediate

outlook is good for both home and heavy industrial fuel oil. The loss from Iran has been estimated at about 610,000 barrels a day. This has been offset by an increase in crude oil production in the Near East and the Caribbean area and the tremendous production by the domestic oil industry. The full impact of the Iranian shut-down has not yet been felt, however, and industry eyes are watching for two danger signals that may cause the supply situation to turn completely around. One is the possibility of a severe winter which may put demand away up, and the other is the probability that a shortage of steel will put a crimp in expanding domestic production. Bruce K. Brown, deputy administrator of the Petroleum Administration for Defense has hinted that oil and gasoline rationing may be necessary next winter if the petroleum industry does not get the steel it requires. "We have been rocking along with a supply of steel about 75% of the amount that the industry had been using in the months before the Korean invasion," he said. "Unless the situation is bettered, and soon, we are in for trouble."

LUMBER: Production of lumber continued at a high rate during the first two quarters of the year and is giving every indication of keeping up the pace during the coming months, despite a current softness in the market. Latest report of the Lumber Survey Committee of the Secretary of Commerce, calling attention to the decrease in shipments and new orders, a build-up of lumber stocks at the mill, and a gradual decline in average wholesale lumber prices, sees some cause for optimism in the continuing favorable weather throughout most of the country, and the possibility that demand will pick up in the fall. At the time of issuance of the report, it was stated that direct and indirect military requirements for lumber had not yet taken up the slack in demand created by the credit restrictions on housing. Relaxation of some of those restrictions in the past couple of weeks and the intensification of the defense program are expected to tighten things up a bit.

CHEMICALS: Optimism over recent improvements in chemical supplies brought a sharp reminder from the trade journal, *Oil, Paint & Drug Reporter*: "Professional prophets were beginning to tell industry that the defense program's pinch would not be so severe as was generally expected. To the extent to which some of the predicting was based on a belief in an adequacy of basic materials, it did not sound logical to those who know that shortages do exist"... Decline in demand has left benzol in easier



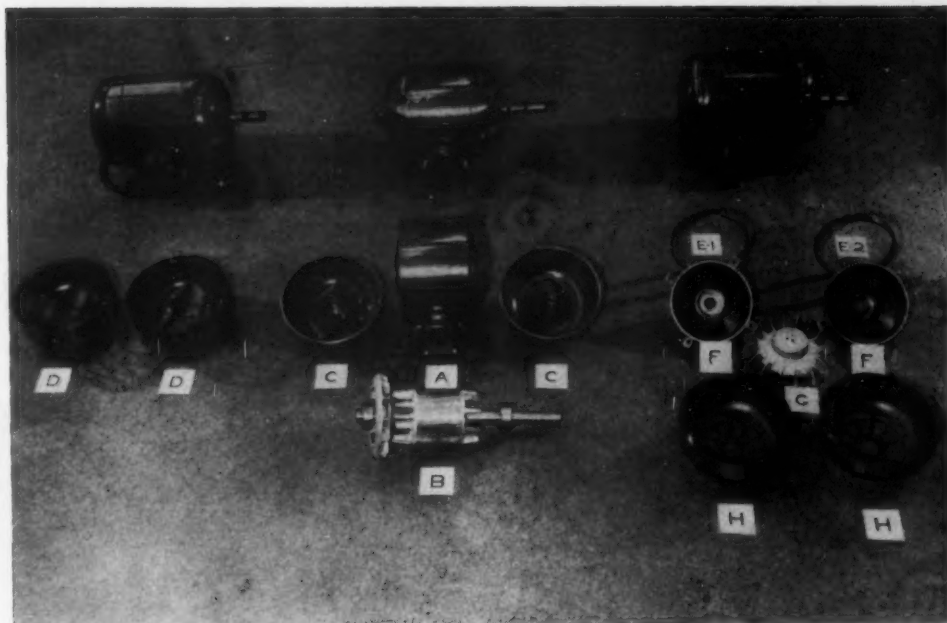
supply, with a possibility of tightening if fall business takes an upturn... Phenol was still tight, but pressure on orders was said to be lessening... Improvement was reported in supply of soda ash and of liquid and solid caustic soda, although flaked caustic is still relatively tight... An NPA warning that there will be a 100,000 ton shortage of sulphur during the last quarter of this year appeared to be the forerunner of a cut in the less-essential uses. It is hoped that some relief will be given to producers of sulphuric acid, which is still in very tight supply.

Selecting Small Motors

By Donald Frederick

*Photographs by courtesy
York Corporation and
Westinghouse Electric
Corporation.*

Interchangeability of parts enables the manufacturer to supply three different types of motors from standard basic sub-assemblies. Stator "A" and rotor "B" are common to all three models. Add end bells "C" and the open-protected motor in the center is produced. Reorient brackets and add parts "D", and the splash-proof motor at the left results. Additional parts "E", "F", and "G", and substituting "H", gives the fan-cooled motor on the right.



THERE is a lot of good factual information available that will serve as an intelligent guide to the selection, specification, and procurement of small motors. Some of it comes from the manufacturers, and some of the essential use data are obtainable within the buyer's own organization. The purchasing agent who will take the trouble to familiarize himself with these facts can simplify his problems, save time and money.

One important reason for having this information available to those who must purchase small motor equipment is that in these times there is frequently no wide choice if reasonable deliveries are expected. In times of extreme shortages in the electrical equipment field, it is not uncommon to have many items of equipment purchased or shipped without the necessary motors, selection and procurement of a drive being left to the purchaser.

In this discussion, "small" motors are considered to be those not exceeding 5 horsepower. Actually, there exists a very substantial group of "fractional" horsepower motors (less than 1 hp.). Recent rapid developments in this field are due in large part to the wartime necessity of finding accurate and reliable small drives for airplane controls.

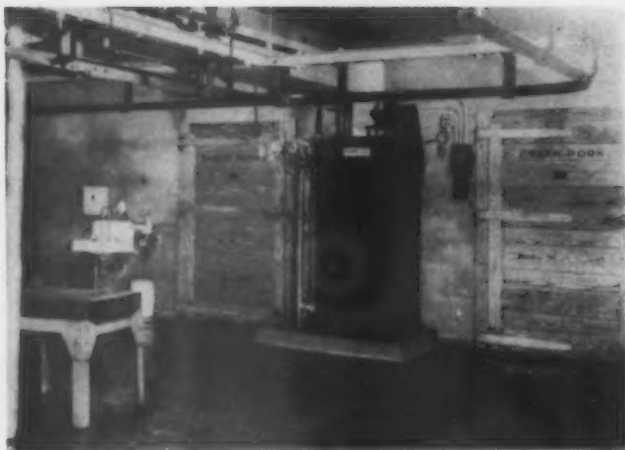
In general, the selection of a small motor will depend on the kind of duty for which it will be used and the kind of current available. There are inherent differences of behavior among the various types, and there is a decided difference in the characteristics and behavior of direct current motors as compared with alternating current motors. In addition to these two types, there are the "universal" motors, to operate on either d.c. or a.c. current where the loads are extremely low and where speed is the desired characteristic, rather than

duty in respect to the load. Small universal motors are now offered in a variety of sizes for such applications as business machines, motion picture projectors, laboratory equipment, temperature regulators, toys, razors, and other devices requiring high speed and a minimum of maintenance.

Direct Current Motors

Direct current offers a wide range of speed control in a motor because the resistance, which governs speed, may be changed or regulated very simply. While a.c. is practically a universal current with respect to public utility supply, thousands of industrial plants, hospitals, hotels, public buildings, etc., use direct current exclusively, and equipment designed for use in such places is usually required to operate on d.c.

The three types of d.c. motors in common use are the series, shunt,



Fractional horse-power a.c. motor used on cooling unit drive. Accessibility of the motor for maintenance purposes is important.

and compound. These types may be modified to suit special purposes. In application, each type has its own features which make it desirable or undesirable.

Series motors are specifically applicable to operations where the motor control is under the care of an attendant. It so happens that its best applications are in services where we would expect to find an operator at all times. The series motor has a high starting torque characteristic, and for this reason it is used in street car and electric bus service, hoists and cranes of various types, elevators and other devices having an escalator action. A good rule to remember, where direct current is used, is that a series motor is a good one to select where the motor starts under load and is loaded at all times, and in addition is under the control of an attendant. In the series motor, the speed regulation is not good, and it is the practice to confine applications largely to those mentioned.

Shunt motors are the most popular of the d.c. group. In the shunt motor we find some of the characteristics of series motors plus some added features. The shunt motor has a good starting torque characteristic, but is not used where it is required to start heavily loaded. It offers a very nearly constant speed over a wide load range. Shunt motors do a good job for either constant or adjustable speed service for driving centrifugal pumps, fans, blowers, machine tools in either metal or woodworking, conveyors, and certain types of elevators.

Compound-wound motors are actually a combination of the series and shunt types, achieved through windings of both these types in one motor. Outstanding feature of the compound-wound motor is its very heavy starting torque. It will actually take a starting torque up to

300% of its full-load torque. The speed regulation will range from zero to maximum depending on the nature of the load and kind of control.

Compound motors are used quite universally to drive machinery where very high starting torque is required and where the speed can be regulated. As in the case of other

Standard types of motors are assembly line products, and are adaptable to many common purposes. But be sure you specify the right type of motor for the service required, and look into the possibilities of special types wherever unusual conditions of use are encountered.



d.c. motors, regulation is often done manually. Cranes, hoists, bridge lifts, gates, and other heavy-duty service are logical applications.

Of particular interest to the purchaser of small d.c. motors is the apparent interchangeability of the shunt and compound motor, and the fact that the compound may often be used in service similar to the series. Many manufacturers making all three general types will often offer any two for the same service, providing the service requirements do not go beyond the characteristics of either of the types. Where both

a.c. and d.c. are available, there will be a wider choice, since some of the a.c. motors compare favorably with shunts and compounds in the d.c. group.

Alternating Current Motors

Industrial alternating current is supplied, for the most part, on 60-cycle frequency. The one characteristic a.c. motors have in common is constant speed for all practical purposes. Speeds of a.c. motors can be "stepped" so that, in some instances, two to four fixed speeds are obtainable.

There are five general types, including **synchronous motors**, which are not considered in the small motor group because the usual applications are in 25 horsepower and up, and the reasons for using them may be more than simply for driving a machine.

Fixed speeds of a.c. motors vary in multiples of 30 r.p.m., the usual low limit being 900 r.p.m. for small integral horsepower units up to many thousands of r.p.m. for the

sub-fractional horsepower motors. There is an a.c. motor for every common use in factories and commercial and household applications. For household appliances, a.c. fractional horsepower motors are used exclusively, for the obvious reason that this is the type of current available for such use.

General-purpose squirrel cage motors are the first of the standard a.c. types. They are available from one-half horsepower upwards. For service where constant speed is desired, they perform excellently when driving fans, blowers, machine tools,

and centrifugal machinery where best efficiencies are obtained at higher speeds. These motors may be designed for two to four fixed speeds, but do not have speed control as it is commonly understood for motors of the d.c. type doing similar work. For two-pole units, the starting torque is 200% of full load; this characteristic changes with the number of poles used.

Full-voltage starting motors, of the squirrel cage type, will produce a starting torque 250% of the full load in the high speed designs. The size range in small motors of this design is narrow, since the bottom size is about three horsepower. This motor is also a constant-speed machine which can be designed for two to four fixed speeds but not having speed control in the accepted sense. From no load to full load, this motor will change speed about 6% in the smaller sizes. Common applications are the driving of reciprocating devices such as pumps, coal pulverizers, crushers, compressors, and various types of mixers where stall-

Speed regulation in high-slip motors is poor, having a change up to 12% from no load to full load. They have no speed control, as such, but may be designed like the other a.c. types for two to four fixed speeds. The starting torque is 300% of full load, depending on the rotor resistance characteristic. High-slip motors will not stall under applied load, usually, until the applied load produces a torque equal to that for starting conditions. Sizes range from one-half horsepower upwards.

Wound-rotor a.c. motors have an extremely wide range of horsepower, running from one-half up to several thousands. In the small sizes, the speed regulation is about 5% between no load and full load. Since these motors may be reduced in speed to 50% of normal by rotor resistance, they are used where limited speed control is desirable, as in certain fan and blower applications, compressors and cranes. Depending on design, the starting torque may be as high as 300% of full load.

similar design and rating; bearings were designed and lubricated so as to require no attention for five years. Basis for the design improvement was the use of steel in place of conventional cast iron. Steel structural features permit generally closer tolerances. Furthermore, complete interchangeability of parts and mountings give added advantages to users faced with plant conversions, and this feature likewise tends to speed up deliveries.

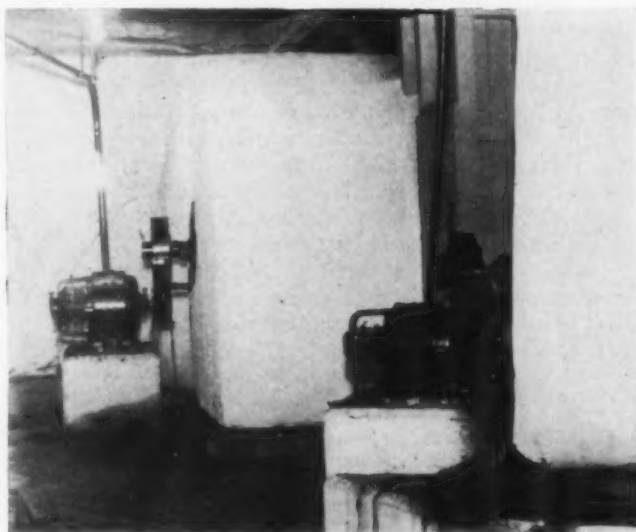
Conditions of Use

One of the most important considerations in motor purchasing is the environment in which the motor must operate. For example, standard types of motors should not be used where the surrounding atmospheric temperature is likely to exceed 130 degrees F; above this range, the usual practice is to consider the application a special one. Fully enclosed motors give protection against dust and other atmospheric hazards, and reduce maintenance.

The installation of small motors, with respect to position, dust density, and accessibility, must be given proper consideration. No motor can perform better than its surrounding conditions permit, even though its application is correct with respect to load, speed, and service. Wherever special conditions of any sort prevail, they must be recognized in motor selection. Purchasing a standard motor where a special motor is indicated may be costly practice in the long run, and is often the cause of trouble later on which could have been avoided.

Better Controls Coming

Many new developments in the electric motor field are anticipated. In particular, great strides are expected in better controls. Developments in the electronic sphere may easily change the whole picture in regard to speed control of a.c. motors; when these developments become realities, the application of a.c. motors may change radically. High frequency motors, not now commonly used in industry, may come into more general use for many applications. Further developments in "torque" motors will also give industry a very useful tool. The prospective purchaser of motors will do well to keep up to date on progress in this field, for the range of equipment available to him is constantly broadening, with the corollary of better and more trouble-free service, and dollar savings.



Small d.c. motors used on blower drives. In many instances, either a.c. or d.c. motors may be used for such service.

ing must be avoided.

High-slip squirrel cage motors are used where high frequent peak loads occur, as in punch-press work. These motors are frequently used with flywheels for energy storage used during the working stroke, as in shearing operations. Die stamping machinery, power shovels, hoists, and balers are some of the usual applications. In general this is a good type motor for service where part of the work cycle is at low output and the other part is at high output, and where speed regulation is not important.

The prospective purchaser of motors is also interested in other facts about motors and their application. Motor maintenance requires highly skilled and high paid labor, and therefore must be minimized. For this reason, developments of the past few years in the a.c. motor are of interest.

Maintenance Factors

Early in 1947, a new type a.c. squirrel cage motor designed for minimum maintenance was put on the market. This motor was 35% smaller than previous motors of

How the Freight Forwarder Helps the Purchasing Agent

By S. T. Genet Assistant to the President, National Carloading Corp.



DISPATCHER sends pick-up truck after the forwarder receives a call from the shipper. Truckmen check regularly with the dispatcher, who frequently handles as many as 400 calls a day.

DURING last summer's ravaging floods, the safety of a small rail shipment was, understandably, of little general importance. Yet many such shipments were of vital particular importance to the purchasing departments that ordered them and to the production departments that needed them.

With transportation badly crippled, many buyers were nevertheless assured of having their goods guided through or around the danger areas and delivered with a minimum of delay. This job was done for its customers by a fast-growing type of service organization—the freight forwarder. With a shipment using several different carriers, it

would have been extremely difficult for anyone but the freight forwarder to locate it during such an emergency.

By the very nature of his operations, the freight forwarder was the one agency that could keep accurate tabs on less-than-carload lots. As a middleman between the shipper and the means of transportation—whether by air, water, rail, or truck—the freight forwarder knows from strict records exactly where his various shipments are at all times.

In a typical operation, hundreds of small shipments from suppliers in a given area are brought together at a freight forwarding terminal for consolidation into a full-load move-

PICK-UP TRUCK loads at the shipper's door. From this point on, full responsibility for the shipment to destination rests with the forwarder, regardless of the number of miles or the number of routes the shipment travels.



ROUTER at forwarder's terminal receives bill of lading from the incoming truck. With his over-all knowledge of freight movement—whether by rail, truck, or air—he routes shipment by the fastest and most economical transportation.



ment. At the terminal, the shipments are sorted according to classification ratings and destination. The goods are shipped in full loads to break-bulk centers and on to the consignee. The freight forwarder is kept posted by the railroads on all movements of his cars.

Even without the pressure of an emergency, the freight forwarder's service provides important advantages for the purchaser in his routine work, particularly where goods are purchased f.o.b. shipping point. Once picked up, the merchandise begins to roll immediately toward its destination, with no stops between consolidation and break-bulk terminals. Acting as a traffic department, the forwarder makes sure that the lowest possible rate applies and chooses the route by which a shipment travels. With up-to-the-minute reports of shipping conditions from all the company's stations, he sees to it that the fastest and best method of transportation will be used. During strikes or other tie-ups, he can quickly arrange a by-pass of trouble spots. His close control over shipments permits him to give complete tracing service and issue diversion notices. Through complete control of all shipments and documentation, he also can offer great speed in settling claims.

Only one bill is rendered for the complete shipping service. No matter how many rail or truck lines have carried the goods, the charges are all combined. The freight forwarder derives his income from the difference between the l.c.l. rate the shippers or purchasers would pay and the full-load rate he pays. From this spread, the expenses of solicitation, handling, and administration are defrayed.

Service, speed, dependability, economy, and nationwide coverage are the advantages the purchasing agent can expect when he specifies the national freight forwarder on his order as the carrier desired. Already faced with new problems of short supply and requirements of prompt delivery, the purchasing man can turn over thorny traffic problems to the freight forwarder with confidence that his shipment will get to the right place at the right time.

TRUCK FLEET at typical terminal indicates scope of forwarders' service facilities for pick-up and delivery. Local leasing arrangements make it possible to expand these facilities to meet any requirement.

OCTOBER, 1951



SMALL SHIPMENTS are sorted and consolidated at the terminal into full carloads for quick rail and truck transportation—resorted at destination for store door delivery to purchasers.



LOADERS are trained in careful handling and stacking techniques to minimize damage possibilities in transit. All shipments are thoroughly checked at every handling stage.



ONE BILLING by the forwarder covers the entire shipment, saving paper work for the purchaser and simplifying problems of tracing and claims if these should be necessary.



World-Wide Quest for Additional Materials

WITH materials in short and in some cases critical supply, the current program of steel expansion is creating a whole new area of procurement problems and is responsible for a quest for materials from the far corners of the world as well as from U. S. sources.

Expansion of steel production by 20% is only the starting point in raising the level of industrial activity in this country—for such a boost stimulates increased requirements for all the alloying materials, plating materials, finishes, packaging and transportation facilities needed for processing and distributing the huge addition to the metals supply.

Much of these expanded requirements must necessarily come from offshore—some of the materials most needed are relatively new in their industrial application—and production of some of the materials is limited. Furthermore, the major portion of these materials is already being purchased by either the U. S. or some other Western nation.

What remains on a free market basis is much too meager a supply to fill the enlarged need for materials.

Similar shortages occurred during World War II, when normal sources of supply were cut off because of military action. At that time, the Foreign Economic Administration was created as a Government buying agency to scout the world for supplies to make up our shortages.

Now the issue is whether to chase material supplies wherever they may be available, or to work out a program to increase the supplies available to us through planned development and exploitation.



JESS LARSON

Able Administrator of General Services takes on new responsibilities as head of the Defense Materials Procurement Agency.

The current thinking is that the higher level of demand for materials is not merely a wartime phenomenon, buoyed up by the conflict in Korea and sustained through the period of defense mobilization. It is felt rather that the increased demand for materials is a permanent development based on a world-wide trend toward industrialization, with the U. S. far in the lead toward a permanently higher level of industrial output.

Whether this premise is true or not remains to be seen. The high plateau of demand for steel during World War I was followed by a slump that saw demand for steel decline to a fraction of the then small steel-making capacity.

The significant fact is that the present policy of our Government presupposes a permanently increased level of demand for materials in which we are now substantially deficient.

National Procurement Agency

To offset this shortage, a new agency has been created—the Defense Materials Procurement Agency, function of which will be to purchase materials needed for the national stockpile and for industrial usage. In addition to the function of purchase, the Defense Materials Procurement Agency (DMPA) will work out methods and procedures for increasing output of materials both in this country and abroad.

The domestic supply outlook on basic metals is concerned largely with the possibility of bringing marginal producers back into operation. There is little likelihood that new large reserves of basic ores will be discovered in this country, but high cost diggings can add to the total supply of metal, and some smaller deposits can be exploited.

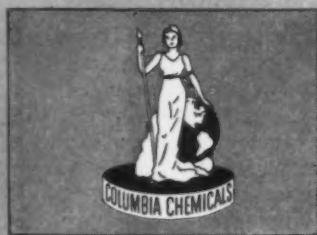
In addition, there is considerable exploration for the materials which have recently become of major importance for industrial requirements—such as beryl, titanium, columbite and uranium.

To stimulate production of domestic ores, the DMPA will make subsidy payments to high cost pro-

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Bureau of Mines experimental blast furnace at Pittsburgh, constructed this year to test the extraction or recovery of manganese from open hearth slag.

ducers, loan money, contract for the output of high cost producers, and in general take all possible steps to increase domestic output.

On imports, DMPA will operate on a similar basis. The whole field of imports has recently become complicated by the attitudes of foreign governments. Brazil has been blocking the exportation of its beryl. India will not permit exportation of monazite. Other countries have increasingly taken the position that they will not export strategic ores, preferring to process the ores in their own country and export the refined material—with the dual pur-

pose of adding value to their exports and providing work for their own citizenry.

Under such conditions, the arrangements with these countries originating scarce materials must necessarily be made on a Government-to-Government basis.

Planning for Plenty

The procedure for establishing what materials are to be bought will be to evaluate the shortages as evidenced in the materials applications by industry, the military and the Atomic Energy Commission.

Presumably when the National Production Authority is unable to allocate materials sufficient to meet all demands, the unfilled demand represents the extent of the shortage.

The lists of materials in short supply, with estimates of the tonnages needed to bring supply in balance with demand are to be forwarded to the DMPA, and the new purchasing agency will draw up a plan of purchase. Estimate will be made of the possibility of increasing the domestic supply through subsidy or other arrangements. Costs and obligations involved in stimulating the production of offshore supplies will be evaluated, and out of these procedures will be formulated a plan under which the deficit in materials can be met.

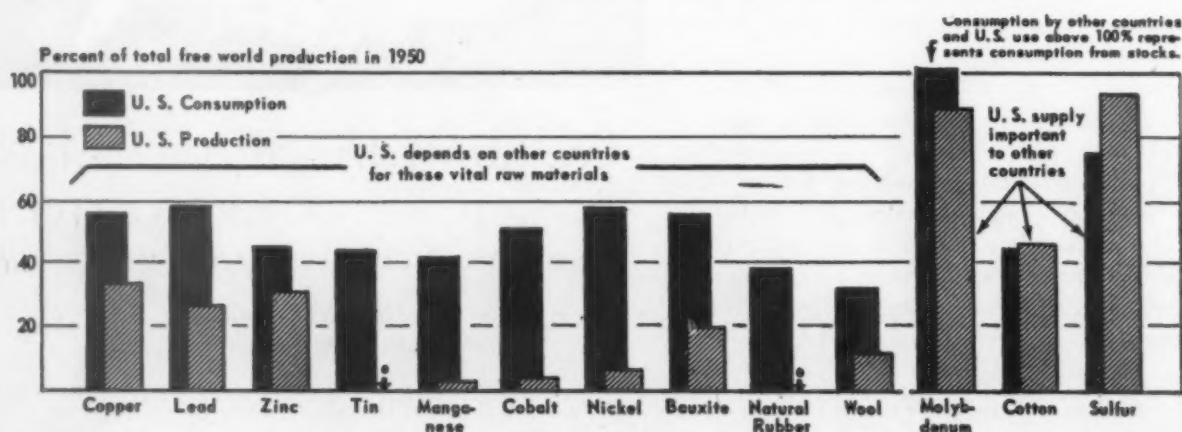
Not that every shortage can possibly be overcome. There is one instance where the military requirement for a particular material was four times the total world supply.

Nevertheless it is known as the result of our previous wartime experience that offshore supplies can be increased very substantially through planned development and financial aid.

In some respects, the foreign procurement will be similar to the Economic Cooperation Administration function of procuring raw materials in partial payment for the Marshall Plan aid extended. There is, however, one specific difference between the foreign purchase policy of the new agency and that of ECA—namely, that the ECA policy of foreign purchase was purely a by-product of its overall purpose of aiding the Marshall Plan countries.

The primary purpose of the new

The U.S. and the rest of free world depend on each other for vital raw materials



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Copper mining in the northern ore fields goes deeper and deeper. (Bureau of Mines photo)

agency will be the acquisition of the materials, and any benefits accruing to the originating country will be secondary.

Buying in World Markets

Another point of difference between the operation of DMPA and of ECA is that the ECA could buy only materials originating in Marshall Plan countries, while much of our material deficits must be met by purchases in Latin America, independent African countries and the Far East. The DMPA will operate wherever needed materials can be purchased.

Administratively, the new agency will take over the materials procurement functions of other Government

agencies now procuring materials, and then will delegate these functions back to these agencies until such time as the DMPA can build up its staff to actually do the buying.

Eventually DMPA will build up a staff of professional buyers. Spot purchases of materials will be made through brokers and on commodity markets when prices and conditions of purchase are satisfactory. On the longer term type of negotiation, where Government-to-Government relationship is involved, and when commitments must be made for loans or guaranteed markets, the DMPA staff will negotiate the purchase.

Some indication of the wide range of purchases entailed in the new program is the purchase program

for the strategic materials stockpile. The purchase program for the national stockpile calls for the purchase of 62 materials. The additional purchases which will be made under the new program will considerably enlarge both the number of items purchased and the overall volume of purchases.

Not an Economic Weapon

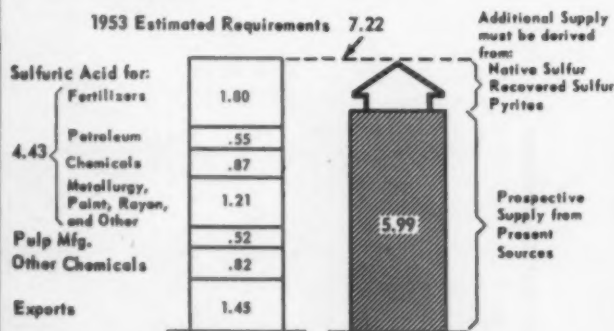
Conceivably, the new agency might engage in preclusive buying—buying strategic materials merely for the purpose of depriving Iron Curtain countries of such materials.

The unfortunate fact is that the Iron Curtain countries do not have any pressing problem in materials supply. The land masses of the Soviets, Communist Asia and East Europe have a large store of strategic materials—especially as the civilian usage of such materials in the Communist countries is very limited.

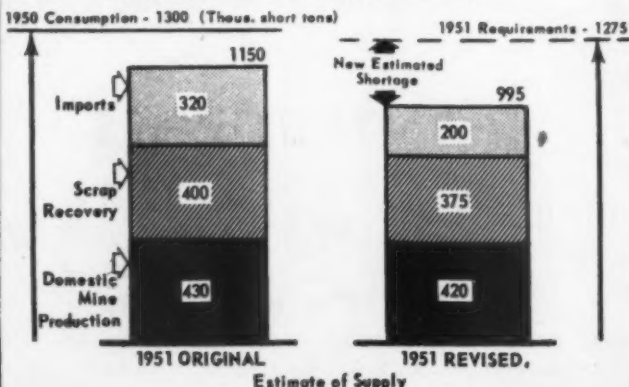
The Soviets have from time to time purchased natural rubber from Malaya, but these purchases have neither been large nor on a regular basis. With a restricted supply of foreign exchange, the Soviets are in no position to buy materials for the sole purpose of keeping them out of our hands; and we, on the other hand, are in no position to squeeze Soviet industry because they have the materials which they need for their war industry.

So the outlook is not a contest of buying between the contesting powers, but rather a world-wide quest for additional supply of materials to meet the needs of a rapidly expanded industrial economy. The objective of the new agency will be to organize the quest for materials on a rational basis at justifiable price levels and in sufficient quantities.

Additional sources of sulfur must be developed to meet rising requirements



Lead supply tightens as imports drop



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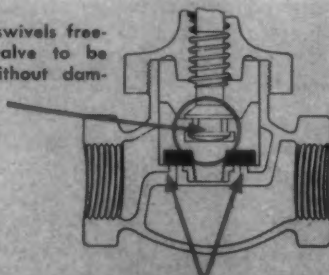
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Getting Full Protection in Chattel Mortgages

By Leo T. Parker

RECENTLY, a reader wrote as follows: "I am purchasing agent and also in charge of credit for our corporation which sells merchandise, appliances and equipment on installment plan. You have assisted us in the past to win two law suits, and we appreciate your services. I have read your legal discussions in *PURCHASING* for many years but at no time have I read any law suit which holds that an unrecorded chattel mortgage on merchandise is valid. We have a case now like this and will appreciate your giving us the law on this point, relating to appliances. Another question is: Under what circumstances, if any, is a properly recorded chattel mortgage or conditional contract of sale void? This latter is very important because a void chattel mortgage or conditional contract means that our company may not collect money due

The recent liberalization of credit regulations and the expected growth of installment selling make it important to review the law on chattel mortgages to avoid possible losses arising from such transactions. Here are a number of pertinent higher court decisions bearing upon these problems, illustrating the pitfalls that may be encountered and the safeguards that may protect your company, as a seller or as a buyer on conditional sales contracts.

chandise if (1) his *first* lien, as a chattel mortgage or conditional contract of sale, is properly recorded and the goods can be removed without damage to the building in which the goods are located; and (2) the purchaser violated or breached his contract.

Unrecorded Liens

According to a recent higher court an unrecorded chattel mortgage on merchandise, appliances or equipment is valid and effective under these *two* conditions:

(1) If the owner of the goods had knowledge that the *unrecorded* mortgage existed. For example, assume that A mortgaged chattels to B to secure payment of money B loaned A. Also, assume that B did not record the mortgage, but C knew that B held the mortgage. Later A sold the chattels to C who claimed that B's mortgage is void because it was not recorded. Under these circumstances, higher court will hold that the unrecorded mortgage is effective and valid as to C because *he knew* that the mortgage existed.

(2) An unrecorded mortgage or conditional contract of sale is valid

if the lien is noted on the bill of sale or certificate of title, as required by a state law.

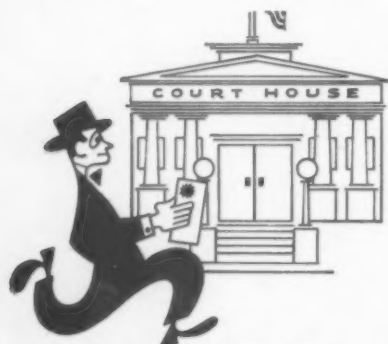
For example, in *Hinton v. Bond Discount Company*, 218 S. W. (2d) 75, the testimony showed facts, as follows: Ethel Eads received a "Certificate of Title to a Motor Vehicle" from the State of Texas. This certificate contained a description of the car; that it was purchased from L. D. Jones Motor Company, Nashville, Texas; that the owner was Ethel Eads, Houston, Texas; and that the automobile was subject to a *first* mortgage lien in the amount of \$669.60, in favor of the Bond Discount Company, Houston.

In subsequent litigation the testimony disclosed that the Bond Discount Company had loaned money to Ethel Eads on the car, had taken a chattel mortgage to secure the loan, but had *not* recorded the mortgage.

The Bond Discount Company did not record its chattel mortgage because the state laws of Texas give the holder of a Certificate of Title a valid enforceable *first* lien if a chattel mortgage or lien is noted on the certificate, although the mortgage is not recorded.

Ethel Eads, without the knowledge or consent of the Bond Discount Company, removed the car to Arkansas, and sold it to one Smith who did not know that the car had been mortgaged in Texas. Smith later sold the car to one Hinton, who was in possession of the car at the time suit was filed by the Bond Discount Company.

Although the automobile was driven from Texas and sold in Arkansas, and the Bond Discount Company's mortgage was not recorded either in Texas or Arkansas,



RECORD THE MORTGAGE PROMPTLY AND PROPERLY

from an installment purchaser. Also, how can we be certain we can repossess merchandise which we resell to purchasers who fail to make agreed payments?"

First, it is important to know that one who resells merchandise can be assured of repossessing the mer-



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the higher court held that the Bond Discount Company could take possession of the car from Hinton. The court said:

"A chattel mortgage, executed and valid in another state, and properly recorded there, will be enforced in Arkansas on removal to this state, even against an innocent purchaser. . . . This Certificate of Title to the car was obtained and was in accordance with the provisions of Texas Statutes."

It is important to know that the Bond Discount Company's first lien or mortgage would have been void as to Hinton (1) if the State of Texas had no law which provided that a lien noted on the original bill of sale or certificate of title rendered an unrecorded chattel mortgage valid; or (2) the laws of Arkansas required the Bond Discount Company to refile its lien or mortgage in that state.

Must Follow State Laws

As above suggested, the general law is that a *properly recorded* mortgage or conditional contract of sale is valid in every city, county and state in the whole United States.

The fact that a purchaser fraudulently obtains an apparently good title does not in the least validate his legal title, nor the title of one who makes the second purchase.

For example, in *First National Bank v. Swegler*, 82 N. E. (2d) 920, one Bell borrowed \$1,689.60 from a bank on a 1946 Cadillac sedan automobile. The mortgage was recorded, according to the laws of the State of Nevada and a certificate of registration issued *indicating* that the bank was the mortgagee. Later Bell fraudulently obtained a certificate of title from the State of Wyoming, which certificate indicated that the title to said automobile was clear and unencumbered. Later Bell sold the automobile to an automobile dealer who quite obviously was an innocent purchaser. This latter dealer subsequently sold the automobile to a man named George who received a title certificate to the automobile showing the title clear of all liens.

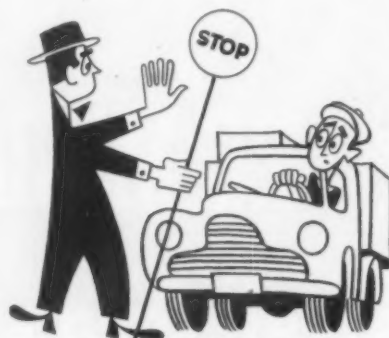
The bank in Nevada learned that George had the automobile in his possession and sued to recover it. In holding that George must deliver over the automobile to the bank, the higher court said:

"We are of the opinion that the owner of a chattel mortgage, valid in the state where it is executed and recorded, has a prior right in the

property mortgaged against an innocent purchaser for value who purchases the property in Illinois."

For further illustration, in *Universal Credit Corporation v. Victor Company*, 33 So. (2d) 703, the testimony showed facts, as follows: The Oliver-Lilly Motor Company of Grenada, Mississippi, sold and delivered to one Robert an automobile under a conditional sale contract. The conditional sale contract provided that the motor company retained title to the automobile until the purchase price was paid. This contract was sold and assigned to the Universal Credit Corporation.

Before Robert had paid the entire purchase price, *without the knowledge of either* the motor company



BE SURE YOUR LIEN IS GOOD IF
MERCHANDISE CROSSES STATE LINES

or the Universal Credit Corporation, the purchaser Robert took the automobile from Mississippi into Louisiana and sold it for cash to a used car dealer, who in turn, sold it to a third person.

This is important: The conditional sale contract was not recorded in the State of Louisiana.

Nevertheless the higher court held that the seller in Mississippi or the Universal Credit Corporation could recover possession of the automobile from the last purchaser in Louisiana and said:

"The Louisiana courts have recognized sales executed in other states . . . Furthermore, it is shown that neither the vendor nor the plaintiff (Universal Credit Corporation) granted any permission to the purchaser to move the automobile out of the State of Mississippi and they had no knowledge that the automobile had been moved out of that state until it had been removed by the purchaser and he had sold it."

It is important to know that this court explained that if the truck had been driven from Mississippi *with knowledge of the seller*, or Universal Credit Corporation, then the last

purchaser in Louisiana would have had first lien on the automobile.

See *Finance Security Company v. Mexie*, 188 So. 657. Here the testimony showed that a conditional sale contract on an appliance was entered into in Mississippi between a seller in Mississippi and a purchaser named White, a resident of Louisiana. The testimony showed that the representative of the finance company, at the time of the execution of the sale contract, *knew* that White, the purchaser, lived in New Orleans and also *knew* that the appliance would be removed to Louisiana after the execution of the sale contract.

It is interesting to observe that the higher court held that the evidence was clear that the representative of the finance company *knew* that the appliance would be taken to and kept in Louisiana, and hence the finance company's first lien was converted into a second lien and it could not repossess the appliance from one who had purchased it in Louisiana from White.

Therefore, it is quite apparent that knowledge of a seller, or a finance company's agent, that a purchaser intends taking the subject of the sale into another state results in the original first lien being reduced a considerable number of degrees.

Review State Laws

In the past the law was well settled that a properly recorded chattel mortgage in any state is "good" in all counties and states in the United States. However, due to a new higher court decision dealers who take chattel mortgages, or conditional contracts of sale, should review the new statutes of different states.

For illustration, in *Colonial Finance Company v. Anthony*, 54 S. E. (2d) 326, the testimony showed that an automobile owner mortgaged the car in Ohio where the loan was made.

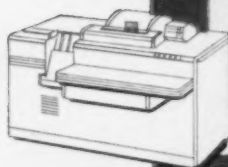
A new law of the State of Georgia provides that when merchandise is brought into the state, a new mortgage must be recorded in the county in Georgia, where the merchandise is now located, within six months after it is brought into the State of Georgia.

The higher court held that the holder of a chattel mortgage in Ohio could not recover possession of the automobile purchased by an innocent purchaser in Georgia, because the testimony showed that the automobile had been in the state of Georgia for over 6 months and no

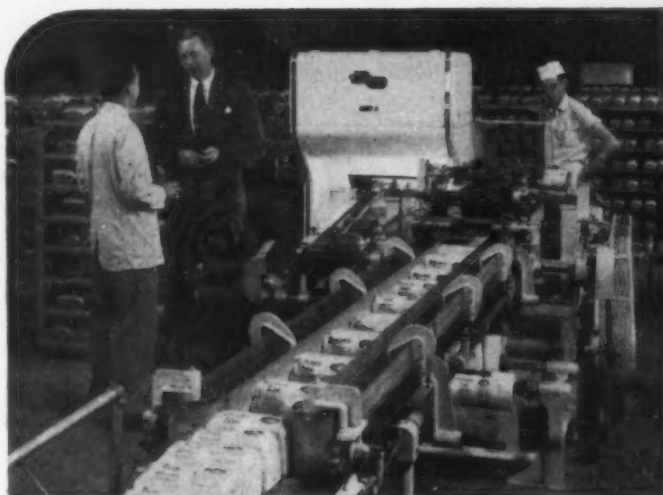


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mortgage was recorded in this state. The court said:

"It is true, in some cases, the mortgagee may have difficulty in following the property within the time allowed by law, but it is easier for him to do this, after voluntarily parting with its possession, than for a buyer of personal property to be required to locate liens and claims, the only record of which exists in some unknown state."

Also, see the late case of *Patterson v. Universal C. I. T. Credit Corporation*, 37 So. (2d) 306. Here it was shown that a dealer in Alabama sold to one Dixon certain equipment for the purchase price of \$1,086.15, of which the sum of \$294.00 was paid in cash. The dealer recorded the conditional contract in Alabama but did *not* record the contract in Mississippi where Dixon lived and took the equipment. A law in Mississippi provides that mortgages and other liens on personal property, merchandise, etc., executed out of the state shall be binding in Mississippi only if a duly certified copy of the lien be delivered to the proper clerk of a court in Mississippi for record. The dealer failed to record the lien in Mississippi. Dixon sold the equipment to one Patterson in Mississippi who had no knowledge of the lien.

In subsequent litigation the higher court held that the company which financed the transaction could *not* recover possession of the equipment from Patterson.

Dealer Assists in Fraud

According to a recent higher court if a dealer or seller intentionally or unintentionally "assists" a purchaser to perpetrate fraud on an innocent party, such dealer or seller automatically forfeits his first lien.

For example, if a seller gives *both* possession of equipment and a clear bill of sale to the purchaser, the seller cannot repossess the merchandise from an innocent purchaser irrespective of the fraud practiced by the original purchaser.

For example, in *Equitable Credit & Discount Company, Inc. v. Murray Company*, 54 S. E. (2d) 650, the testimony showed these facts: A seller executed and delivered to one Johnson a bill of sale to equipment for the consideration of \$2,000. This amount was not paid by Johnson in cash but he gave his *personal check* to the seller for \$2,000. The seller failed to make any notation on the bill of sale, or otherwise, to the effect that legal title did not pass to Johnson until the check was paid

by the bank on which it was drawn. Hence, the bill of sale and delivery of the equipment conveyed a good title, as to innocent purchasers, to Johnson.

Later Johnson sold and delivered the equipment to the Equitable Credit and Discount Company for \$1,050 and executed a bill of sale to this company. Immediately afterward the Equitable Credit and Discount Company resold the equipment to Johnson for \$1,344, payable \$126 per month for ten months. Hence, Johnson acquired cash and also possession of the equipment. After the conditional sales contract had been executed between the Equitable Credit and Discount Company and Johnson, the equipment was delivered to Johnson. Soon afterward the Murray Company repossessed the equipment



WAIT UNTIL BUYER'S CHECK IS CASHED
BEFORE GIVING TITLE
ON SUCH PAYMENT

from Johnson because the check for \$2,000 he had given as payment was returned to the Murray Company, unpaid. At this time the Murray Company had no idea that Johnson had in the meantime sold the equipment to the Equitable Credit and Discount Company, and then repurchased it. Therefore, the officials of the Murray Company were very much surprised when the Equitable Credit and Discount Company filed suit to recover \$1,344 the balance which Johnson owed for the equipment.

The lower court refused to hold the Murray Company liable to Equitable Credit and Discount Company, but the higher court reversed the verdict and said:

"By delivering their bill of sale the defendants (Murray Company) put it in the power of Johnson to perpetrate a fraud on the plaintiff (Equitable Credit and Discount Company) to its damage and injury in the sum of \$1,344, because it was on the faith of the bill of sale from the defendants (Murray Company) and the possession by Johnson that the plaintiff (Equitable Credit and

Discount Company) purchased the equipment from and resold it to Johnson. The plaintiff acted in the utmost good faith and was an innocent person and did not have notice or knowledge that the check which Johnson gave to the defendants was not good."

Law of Secret Liens

Considerable discussion has arisen from time to time over the legal question: If a manufacturer or wholesale dealer delivers equipment to a retail dealer for the apparent purposes of resale, does the law assume that the title shall remain in the manufacturer or wholesale dealer *until* the price is paid? The answer is *yes*, unless in the meantime the retail dealer sells the equipment to an innocent purchaser. Under the latter circumstances the legal title passes from the sellers to the last and innocent purchaser.

For example, in *Kramer v. Streep*, 179 Fed. (2d) 371, it was shown that one Knetzer took delivery of a machine from the Top Company for reselling it. The sale contract contained a clause that title to the machine would remain in the Top Company until paid for by the purchaser. One Kramer purchased the machine from Knetzer not knowing that the restricted contract existed between Top Company and Knetzer containing this clause.

The higher court held that Kramer was legal owner of the machine, saying:

"In any event Top Company, by its conduct, is precluded from denying Knetzer's authority to sell. We think that Kramer acted in good faith and had neither express nor implied knowledge of any reservation of title in Top Company and was a *bona fide* purchaser for value."

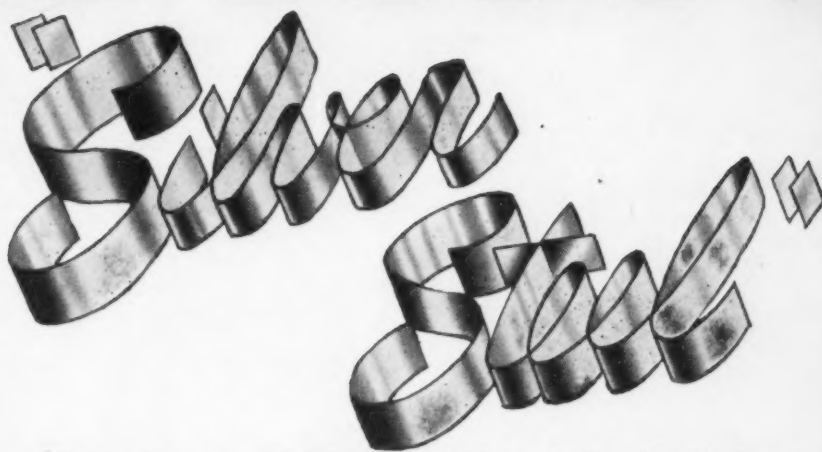
For comparison, see *First Galesburg National Bank & Trust Company v. Reyelts*, 306 Ill.App. 499. Here a distributor permitted a retail dealer to display appliances and merchandise in his show room. The distributor had a lien on the merchandise, but the lien was not recorded.

An innocent purchaser purchased certain appliances from the retail dealer.

In subsequent litigation the higher court held that the distributor could not repossess the merchandise from the innocent purchaser and said:

"A customer in good faith, assuming that Mortenson (retail dealer) had title, purchased the merchandise and in so doing should

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be protected against the holder of a secret lien of which he had no notice."

Check Is No Payment

Considerable discussion has arisen from time to time over the legal question: Can a seller or finance company safely accept a check on a bank as payment for merchandise? The answer is *no*. In other words, the seller always should reserve a lien on the merchandise until the check is paid.

For example, in *Dresher v. Roy Wilmeth Company, Inc.*, 82 N. E. (2d) 260, it was disclosed that a seller transferred the title to a machine to a buyer. The seller did not protect himself by reserving a lien on the machine until the buyer's check for the purchase price was paid. Before the purchaser's check was returned unpaid to the seller, the buyer sold the machine to an innocent purchaser.

In later litigation the higher court held that the original seller could not maintain a replevin suit against the innocent buyer because the latter took a good and legal title from the seller.

This court explained that a bank check is merely a piece of paper which cannot pay for merchandise until it is honored, and a seller can protect himself by making a contract with the purchaser reserving legal title until the check is honored and paid.

When to File Mortgage

A great deal of discussion has arisen over this legal question: When and where must a chattel mortgage on merchandise be filed in order to render the mortgage valid as to all persons? The answer is: A chattel mortgage should be filed in the county and state where the merchandise is located at the time the contract and mortgage was signed and executed.

For example, in *Morris Plan v. Jenkins*, 216 S. W. (2d) 160, it was disclosed that a seller in Oklahoma sold certain merchandise and took a chattel mortgage to secure the balance due on the purchase price. The chattel mortgage was not filed for record in Oklahoma until May 10. On that date, the merchandise actually was in Hot Springs, Arkansas, having been removed there by the buyer.

Later the purchaser defaulted in paying the notes when due, and the seller sued to foreclose the mortgage and get possession of the merchandise.

The higher court refused to permit the seller to repossess the merchandise, and in holding the mortgage void, said that a valid mortgage is only on merchandise located where the mortgage was filed.

For comparison, see *Burke v. First National Bank of Yukon*, 168 P. (2d) 285. In this case it was shown that a purchaser lived in Okmulgee County, Oklahoma, but at the time a mortgage on an automobile was recorded in this county the automobile was in Oklahoma County.

Later the seller sued to foreclose the mortgage and repossess the automobile.

This higher court held the mortgage void, and explained that a chattel mortgage must be filed in the county where merchandise is located at the time the mortgage is filed, and a filing in the county of the residence of the mortgagor is insufficient to impart legal notice to innocent parties. Hence, the mortgage is void as to all parties who



EXPENSES OF TRACING MORTGAGED MERCHANDISE CAN BE RECOVERED

have no notice or knowledge that the mortgage exists.

For comparison, see *M. & J. Finance Corporation v. Hodges*, 55 S. E. (2d) 201. Here it was shown that a chattel mortgage on equipment was executed and signed 30th of September, but was not recorded in the county until 26th of October. The equipment was purchased October 22 by one who had no knowledge that the mortgage existed.

In subsequent litigation the higher court held that the last purchaser could keep possession of the merchandise. Hence the holder of the chattel mortgage lost the money loaned to the owner of the equipment. The court said:

"As the defendant (Bank) acquired an effective lien prior to the registration of plaintiff's mortgage, the lien is superior."

This court also explained that irrespective whether a chattel mortgage, or conditional contract of sale,

is recorded it always is valid as to all who know that it exists. This court said that the *only* good and legal reason a chattel mortgage or conditional contract of sale should be recorded is to give notice that the mortgage is in effect to all persons, firms and corporations in the United States who have *no knowledge* of its existence. In other words, knowledge of any one of a chattel mortgage or conditional contract of sale is, from a legal standpoint, equivalent to its being properly and legally recorded.

Finance Company Awarded Expenses

Recently a higher court held that under certain circumstances a finance company may *not only* recover possession of mortgaged merchandise but *also* may recover money expended in locating the mortgaged property.

For example, in *O'Banion v. Morris Plan Industrial Bank*, 204 Pac. (2d) 872, the testimony showed that a man named Nash purchased an automobile from the King Motor Sales in Louisville, Kentucky, and executed a conditional sales contract for \$559.08 covering the balance due upon the purchase price. The contract was immediately and properly recorded by a finance company which purchased the contract.

The purchaser soon afterward removed the car from Kentucky into Oklahoma where he sold it to a used car dealer named O'Banion who secured an Oklahoma title and resold the car to an innocent purchaser.

Upon the original purchaser Nash defaulting in making agreed payments the finance company employed an agency to trace and locate the car. Eventually it was learned that O'Banion had purchased it. The finance company sued O'Banion for the amount owed by Nash, plus \$150 expense incurred in tracing and locating the automobile.

O'Banion contended that he was not liable, first, because the conditional sales contract was filed in Kentucky and did not constitute constructive notice to him in Oklahoma that the car was encumbered and, second, that he was not liable, in any event, for \$150.00 expended by the finance company in locating the automobile.

It is interesting to observe that the higher court held that O'Banion must pay the finance company the full amount owed by Nash plus

(Please turn to page 370)

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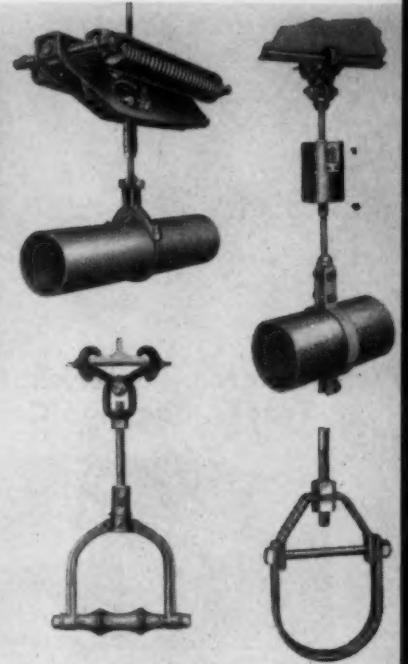
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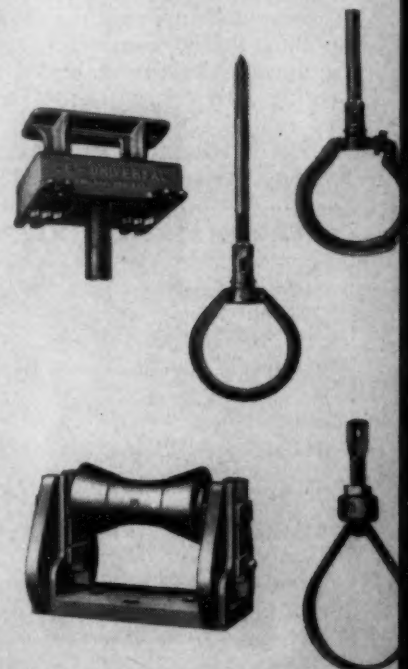
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(Please turn to page 132)

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One of the toughest applications you'll find for testing the mettle of a bronze alloy is Blooming Mill Slippers . . . they take the shock, stresses and frictional wear of the mill driving universals. As an example of the tough service involved, aluminum bronze slippers formerly used in a large Eastern steel company's blooming mill averaged just 3 months' service life before wearing out.

Our engineers suggested a change to N-B-M Alloy 10-B—a Bronze specially developed by National Bearing Research, for this purpose.

Result? Slippers cast from this N-B-M Alloy averaged 9 months of service instead of 3 . . . eliminated 2 out of 3 replacements! Performance was so far superior that this steel company now standardizes on N-B-M Slippers throughout the mill.

We're proud of examples like this . . . because they show how effectively our facilities for Research and Engineering—combined with 78 years of practical experience—make money-saving solutions to problems on . . .

- Slippers
- Roll Neck Bearings
- Housing Nuts
- Bronze Bars
- Babbitt Metals
- Tuyeres
- Tuyere Coolers
- Valves
- Valve Seats and Plugs
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AMERICAN

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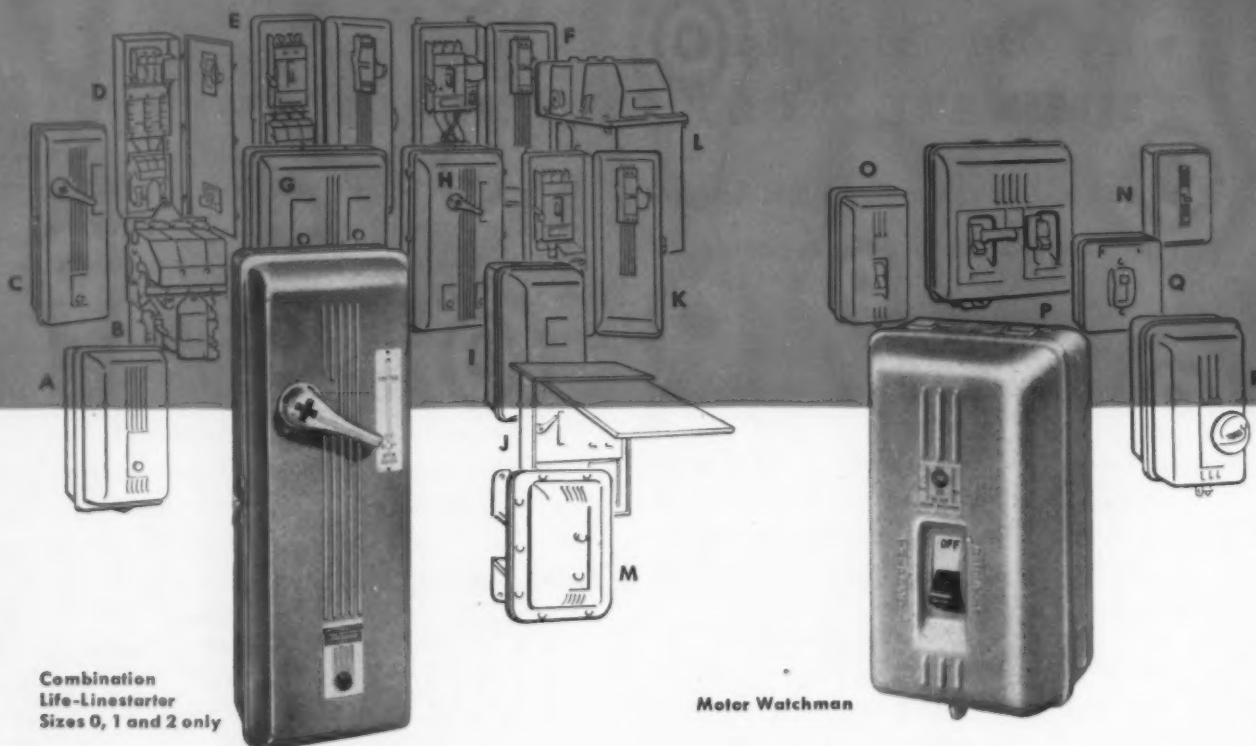
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OCTOBER, 1951

Please mention *PURCHASING Magazine* when writing to advertisers.

129

THE MOST COMPLETE LINE OF MOTOR CONTROLS IN INDUSTRY



Combination
Life-Linestarter
Sizes 0, 1 and 2 only

Motor Watchman

MAGNETIC CONTROLS

A Life-Linestarters **B** Open Life-Linestarters and Contactors **C** Plain Disconnect Combinations **D** Fusible Combinations **E** AB Breaker Combinations **F** J. I. C. Life-Linestarters **G** Reversing Life-Linestarters **H** Fusible or Breaker Combination Reversing Life-Linestarters **I** Multi-Pole Contactors (Relays) **J** Oil-Well Pumping Controls **K** Cotton Card Controls **L** Oil-Immersed Linestarters **M** Cast-Iron Enclosures for Starters

MANUAL CONTROLS

N Motor Sentinels* (also available with indicating light)
O Motor Watchmans
P Reversing Motor Watchmans
Q Motor Snap Switches
R N.E.M.A. IA Manual Starters
*T. M.

Across-the-Line Motor Controls for Every Requirement

How well are you prepared to combat today's increasingly complex control problems? When tight production schedules must be met, down time can play havoc with your production requirements.

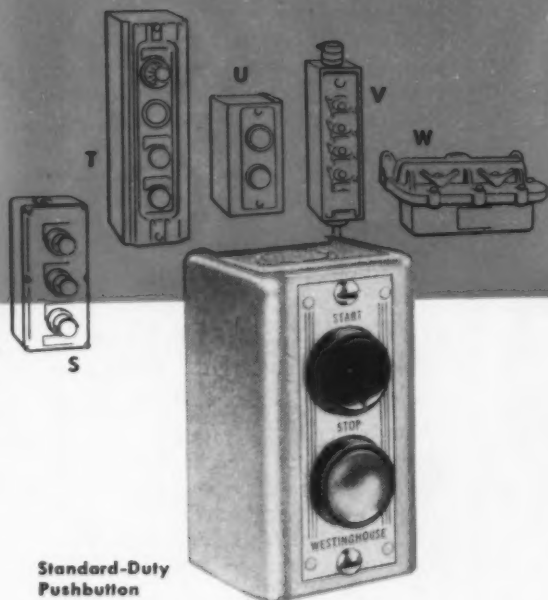
You can be sure of positive motor protection at all times with Westinghouse Motor Controls. Wherever manual operation is necessary, there is a complete line of Westinghouse controls . . . Motor Sentinels, Motor Snap Switches, Motor Watchmans, Reversing Motor Watchmans and NEMA 1A Manual Starters. These controls are available in water-or dust-tight or explosion-proof enclosures.

When you need magnetic controls and control stations, Westinghouse can supply the most complete line of controls in industry. Top creative engineering at Westinghouse has solved many special problems—built and perfected special equipment for such industries as machine tool, automotive, steel, textile, petroleum, chemical and mining.

So don't let down time interfere with your production schedules. Protect your motors with controls by Westinghouse.

For product data, or for application and engineering service on any problem, call your Westinghouse representative, or write direct to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-30079



Standard-Duty
Pushbutton

CONTROL STATIONS

- S Oil-Tite Control Stations
- T Heavy-Duty Pushbuttons
- U Standard-Duty Pushbuttons
- V Pendent Pushbuttons
- W Oil-Immersed Pushbuttons

YOU CAN BE SURE...IF IT'S
Westinghouse

CONTROL



SIMONDS ABRASIVE CO. grinding wheels



ALL'S HARMONY in the grinding department

For better output, these boys know the score. It's Simonds Abrasive Company grinding wheels for the stepped-up tempo of defense requirements. Simonds complete line has everything to keep your production in tune with today's needs... grinding wheels for every operation, mounted wheels and points, segments and abrasive grain... top quality products backed by Simonds Abrasive Company's reputation as a major grinding wheel manufacturer for almost 60 years. Write for free grinding data book listing name of your Simonds distributor.



SIMONDS ABRASIVE COMPANY, PHILADELPHIA 37, PA. DISTRIBUTORS IN PRINCIPAL CITIES

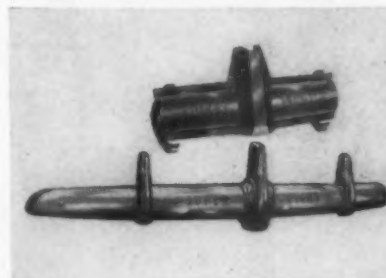
Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N. Y., Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co., Ltd., Arvida, Que.

(Continued from page 130)

bronze. The pedestal is cast iron, with two antifriction bearings supporting the pump shaft. Two sizes of pedestal assembly cover the entire range of pump sizes available in capacities to 1200 gpm at heads to 250 ft. and temperatures to 500 F.

No. 104 — Use Coupon on Page 128

Many Effects Possible With Decorating Masks



Whether you want straight marking or an elaborate color scheme in decorating or identifying your product, Jas. H. Matthews & Co. can supply a mask that will help do the job quickly and with controlled fidelity. The spray mask is a shell-like mold which fits snugly over an object to be colored. The surface of the object to remain protected is covered by the mask, while cavities in the masks permit color to be applied on the proper parts. Matthews says that even unskilled workers in glass, ceramic, plastic, rubber and metal fabricating industries can get perfect results and still increase production by use of the masks. Each mask is electrocasted to conform to every contour of a product. Matthews is at 3959 Forbes St., Pittsburgh, Pa.

No. 105 — Use Coupon on Page 128

Plastic Safety Lens Half Weight of Glass

A new 6-curve plano plastic lens for industrial safety goggles known as Plas-Tough weighs about half that of comparable glass lenses. An improved surface hardness has unusual resistance to scratches, abrasions and common industrial acids that mar ordinary plastics. The maker, Willson Products, Inc., Reading, Pa., says Plas-Tough is the equal of heat-toughened glass in such important qualities as impact resistance and visible light transmission. On jobs where lens pitting is a factor, the new lenses will give many times the service of glass. They are available in the popular drop-oval (P3) shape, in 44 and 47 mm. sizes, as well as 50 mm. round.

No. 106 — Use Coupon on Page 128

(Please turn to page 136)

Remember the trade marks "tt"
and "TUBE-TURN" are applicable
only to products of TUBE TURNS, INC.



the engineered way to put an end to a pressure problem



Write Dept. P-10 for free
booklet giving Dimensional
Data on types, sizes and ma-
terials of TUBE-TURN Weld-
ing Fittings and Flanges.

WHEN IT COMES to containing pressures—in a header or pressure vessel or in merely blanking off a line—your safest, surest bet is a TUBE-TURN Welding Cap. Formed to 2:1 semi-ellipsoidal contours, it represents the ideal pressure-resisting closure for a cylinder. No makeshift capping method can approach its bursting strength which is actually far greater than seamless tubing of like thickness and grade of steel.

Another important point: TUBE-TURN Welding Caps are manufactured to meet ASME Boiler Code requirements and the chemical-physical standards of ASTM specification A106 for Grade A and Grade B carbon steels.

For welding caps and for all TUBE-TURN Welding Fittings and Flanges, see your nearby TUBE TURNS' Distributor. You'll find one in every principal city.

"Be sure you see the double tt

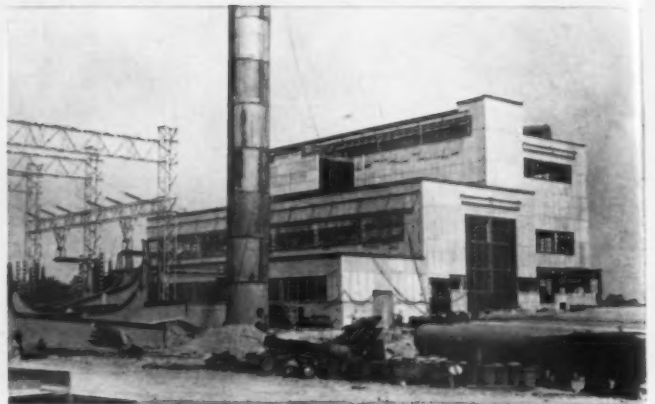
TUBE TURNS, INC.

LOUISVILLE 1,
KENTUCKY

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Chicago • Houston • Tulsa • San Francisco • Los Angeles
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New Ford Power Plant features welded piping



Power station for Ford Motor Company's giant new engine plant and foundry, now being built in Cleveland; F. A. Fairbrother—Geo. H. Miehl, Architect and Engineer; Albert Kahn Associates, Consultants. Engine plant will be equipped with the last word in automatic machinery—to save production man-hours. The designers believe in saving maintenance man-hours too. Thus at the power plant, which will supply 360,000 pounds of 150-lb. steam per hour for heating and process, an all-welded piping system with TUBE-TURN Welding Fittings and Flanges was specified. Welded steam, air, and condensate lines are permanent and leakproof.



Here the 18" steam main from the power plant leads to a fabricated "Y" connection, then through tunnels to foundry and engine shop. One side is stepped down through a TUBE-TURN Welding Reducer to a 16" line; the other side through another TUBE-TURN Welding Reducer to a 12" line. Special "Y" connection was made by cutting and welding two 45° Welding Elbows, a job that calls for uniform wall thickness and concentricity throughout the fittings—a point of pride with TUBE TURNS, INC.

Want Dimension Data?

Tube Turns, Inc. has compiled a handy folder of charts covering dimensions and weights of TUBE-TURN Welding Fittings and Flanges. If you'd like a free copy just send this coupon.

TUBE TURNS, INC., Dept. P-10
224 East Broadway, Louisville 1, Kentucky



Your Name

Position

Company

Nature of Business

Address

City State



In engine shop, smaller lines designed to carry coolant oil to machine tools are also welded. Wide range of TUBE-TURN Welding Fittings and Flanges—including more than 4000 different items—simplifies installation job. Leak-proof piping will free maintenance personnel for other work.



Despite close quarters in tunnel, fabrication goes ahead swiftly. Welders and contractors like to use TUBE-TURN Welding Fittings because they know that dimensions are always accurate, thus line-up is easy. Welded lines can be fitted closely together, will make for a neat installation. With no flanges to work around, insulation can be applied easily.



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New York	Houston
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"tt" and "TUBE-TURN" Reg. U.S. Pat. Off.

TUBE TURNS, INC.
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Now, more than ever before...

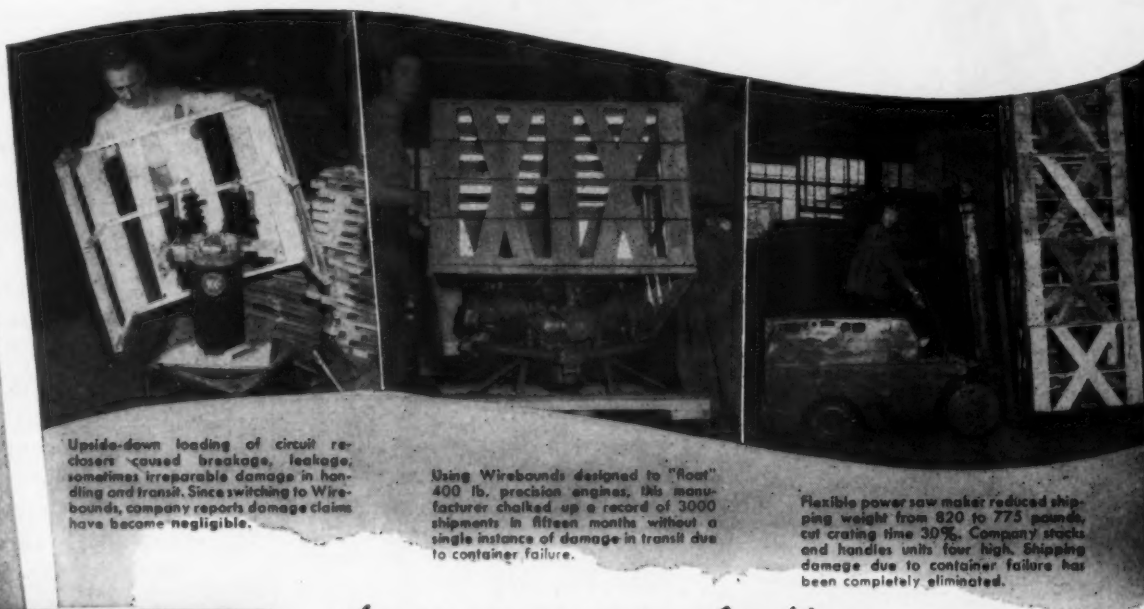
YOU NEED THE PROTECTION OF

WIREBOUND BOXES and CRATES

Losses due to container failure have no place in an industrial economy facing material allocations and shortages. That's why you should investigate *Wirebounds*—which combine the strength of steel with thinner wood to bring you *better product protection at lower cost*. Three hundred graduate engineers of the Wire-

bound Institute have been technically trained to design tailor-made *Wirebounds* which assure damage-free product delivery. The value of this container engineering is clearly demonstrated in the following case histories. We will be glad to show you how these benefits apply to *your product*. Use the coupon below.

YOU CAN CUT DAMAGE CLAIMS LIKE THIS:



Upside-down loading of circuit reclosers caused breakage, leakage, sometimes irreparable damage in handling and transit. Since switching to Wirebounds, company reports damage claims have become negligible.

Using Wirebounds designed to "float" 400 lb. precision engines, this manufacturer chalked up a record of 3000 shipments in fifteen months without a single instance of damage in transit due to container failure.

Flexible power saw maker reduced shipping weight from 820 to 775 pounds, cut crating time 30%. Company stocks and handles units four high. Shipping damage due to container failure has been completely eliminated.

choose your course of action...

**Wirebound
BOXES & CRATES**

- ☐ Send me general information... complete descriptive book titled "What to Expect from Wirebounds."
- ☐ Send me specific information... tear sheets of case histories of packing products similar to mine.
- ☐ Give me direct action send an Institute trained sales engineer to show the advantages of Wirebound packing for my own product.

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CITY _____ ZONE _____ STATE _____

OUR PRODUCT IS _____ IT WEIGHS _____

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Users names on request



to get the fastest, easiest metal-cutting—tell your supplier you want **VICTOR** hand and power hacksaw blades and flexible-back band saws.

Tell him, too, to send you some handy **VICTOR** Metal-cutting Booklets—authoritative, timely facts on the selection, use and care of metal-cutting equipment, plus handy hints on faster, easier production.

Sold only through recognized distributors

1079A **VICTOR**
SAW WORKS, INC. • MIDDLETOWN, N.Y., U.S.A.

Makers of Hand and Power Hack Saw Blades, Frames and Metal Cutting Band Saw Blades

Instrument Improves Process Control

Minneapolis-Honeywell Regulator Company, Philadelphia 44, Pa., has added the Tel-O-Set controller to its group of devices for improving process control. The instrument provides sensitive, instantaneous and accurate control of flow, temperature, pressure, liquid level and other industrial process variables. It is used with the differential converter, Tel-O-Set indicator and Tel-O-Set recorder. It is described as a low-cost, easily installed, compact unit which gives maximum trouble-free operation. In addition to being extremely sensitive and quick to respond to process change, it operates on a pneumatic balance principle which eliminates friction and lost motion.

No. 107 — Use Coupon on Page 128

Rugged 200-Ampere Transformer Welder



A rugged unit with easy-to-operate controls for long dependable service, is the way Air Reduction describes its new 200-ampere transformer welder. It's designed for general maintenance and production welding. Called Model MCM 200, it has a full 200-ampere, 50% duty cycle, NEMA rating. Four variations are available: 220-volt or a 220/440/550 volt unit, each with or without power factor correction. Two open circuit voltages are provided—80 volts on the low range, and 55 volts on the high range. This combines easy arc starting with a lower KVA demand load and primary ampere current. Airco is at 60 East 42nd St., New York, N. Y.

No. 108 — Use Coupon on Page 128

(Please turn to page 141)

Eliminate Costly Labor...



in Cleaning All Types of Oily, Greasy, Dirty Surfaces

Every plant that has oiled or greased machine equipment can save both time and labor costs whenever that equipment needs cleaning by simply eliminating unnecessary hand scrubbing.

Magnusol solution, when sprayed or brushed onto oily, greasy surfaces, takes the "cling" out of the dirt, grease and oil. A simple water rinse leaves really clean surfaces, even in hard-to-reach places.

Magnusol is safe to use . . . harmless to metals or paint . . . non-toxic and non-inflammable.

The Magnusol method can save hours of laborious, costly hand work. Use it for cleaning:

- Machines on the floor.
- Machine parts dismantled for maintenance.
- Engine exteriors.
- Very greasy floors.
- Any oily, greasy, metal or paint surface.

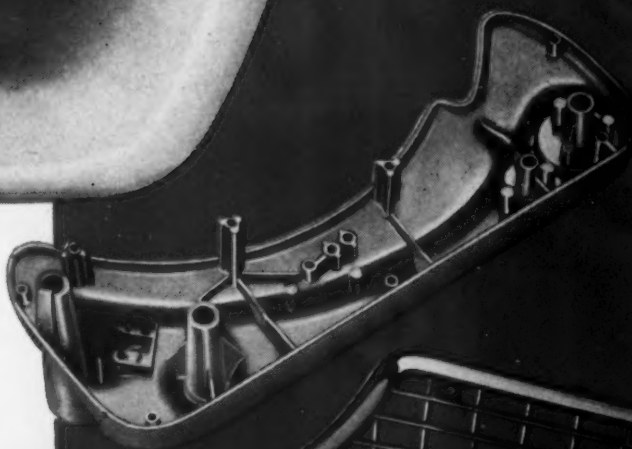
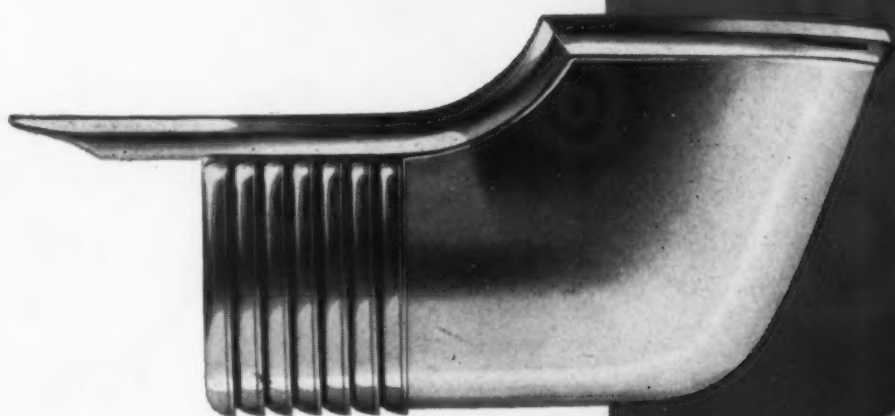
**JUST SPRAY OR BRUSH MAGNUSOL ON —
LET PENETRATE — RINSE OFF!**

Write for Magnusol Bulletin

Serving Industry 30 Years
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MAGNUS
CLEANERS
EQUIPMENT

You're always right with **AUTO-LITE** Die Castings



● Many of America's leading manufacturers, producing a wide variety of products, are benefiting from Auto-Lite die cast research, experience and advancement. Such developments as high pressure casting, special alloying practices and improved quality through the "controlled metals process" make Auto-Lite the logical source of supply for precision die castings. Address inquiries to:

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Here's some information
you'll find useful when
purchasing electrical
products and services.

J.D.

Seven Million

**starts and stops without shutdown
or breakdown—*still going strong!***

"Absolutely trouble-free and to our complete satisfaction," says Mr. C. M. Ayres, Jr., Chief Engineer, Gulf States Paper Corp., Tuscaloosa, Alabama, Producer of "E-Z Opener" Bags.

"This Life-Linestarter was installed to control a 15-hp wound rotor, fixed resistance motor driving a conveyor delivering pulpwood logs to a giant chipper. To regulate log flow, the motor has been started and stopped ten times a minute, twenty hours a day, seven days a week.

"Over a period of nine months, over seven million arcs have been drawn and extinguished—no contacts have been replaced, no observable wear of the originals. We installed a stand-by starter for immediate substitution, but to date, we have not needed it."

Stamina? The Life-Linestarter has it. Simple, rugged design, simple operation for any service requirement.

CONTACTS LAST LONGER

Westinghouse exclusive "De-ion"® arc quencher plucks destructive arcs off contacts instantly—retards wear, pitting.

POSITIVE PROTECTION IN TOUGHEST ASSIGNMENT

Vibration, impact, misalignment will not affect clapper-type armature operation regardless of number of cycles. Out with outages.

OVERLOAD PROTECTION

Snap action, bimetallic disc overload relay prevents motor burnouts; adjustable for "hand reset", "automatic reset" or "no stop" operation.

ONLY ONE MOVING PART

The armature, a single seesaw element center-balanced on a knife-edge fulcrum, is the only moving part of the starter. Dependable for millions of operations.

More proof? Contact your Westinghouse Representative for complete information, or write for Booklet B-4677, "Tomorrow's Starter Today", Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-92022

YOU CAN BE SURE...IF IT'S
Westinghouse

Life-Line

MOTORS and CONTROLS



Yours for the ASKING



for DOING Jobs Right with Plastics!

There's a brand new "Condensed Reference File of BAKELITE and VINYLITE Plastics and Resins" just off the press . . . and available to you for the asking. Simply fill in and mail the handy coupon below.

Brief and highly detailed in its description of the various

plastics and resins produced by Bakelite Company, the eight-page booklet describes dozens of interesting, economical applications of these versatile engineered materials. Fifty-six illustrations, a complete index, and a list of Bakelite Company sales offices ready to serve you

are included, along with valuable technical data on physical, electrical and chemical properties.

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BAKELITE COMPANY, Dept. CQ-25

A Division of Union Carbide and Carbon Corporation **UCC**
30 East 42nd Street, New York 17, N. Y.

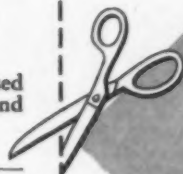
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PLASTICS



BAKELITE COMPANY

*A Division of
Union Carbide and Carbon Corporation*
30 East 42nd Street, New York 17, N. Y.

Self-Inking Hand Duplicating Device



A new hand stamp device prints labels, endorsements, short messages, etc. in volume quantity at low cost. The Print-O-Matic, says the Print-O-Matic Co., Inc., Merchandise Mart, Chicago, Ill., produces thousands of sharp, clean copies with a single inking. No stamp pad is necessary. The message is typed or drawn on a stencil with a stylus. Stencils can be inserted simply and quickly. All necessary accessories come packed in one compact kit. The ink dries fast, won't smear, and is waterproof.

No. 109 — Use Coupon on Page 128

Unique Cigarettes For Christmas Remembrance



Personalized cigarettes — each package bearing holiday greetings and the name of your company — are a new idea for gift advertising during the Christmas season. Tobacco used in the cigarettes is blended by the nation's largest manufacturer of private brand hotel and club cigarettes. The wrappers are printed in bright reds and greens, and are enclosed in cellophane just as standard packs are. The price is only slightly higher than regular cigarettes. Made by Your Name Cigarettes, Dept. 156, 125 West Hubbard St., Chicago, Ill.

No. 110 — Use Coupon on Page 128

(Please turn to page 142)

Over Half of All Top-Rated Firms Use "Speed Sweep"



50,000 FIRMS, including most of the biggest companies, prefer Speed Sweep to all other sweeping tools. Here is proof that Speed Sweep defies comparison. The only better proof is to test Speed Sweep and see for yourself how this better brush sweeps cleaner, faster and easier and outlasts ordinary brushes 3 to 1. Speed Sweep sizes and styles fit all kinds of floors and sweeping conditions. Write today for facts.

Speed Sweep

THE BRUSH WITH THE STEEL BACK



MILWAUKEE DUSTLESS BRUSH CO.

530 N. 22 STREET, MILWAUKEE 3, WISCONSIN

Gentlemen: Please send complete facts about Speed Sweep brushes.

Company _____

Address _____

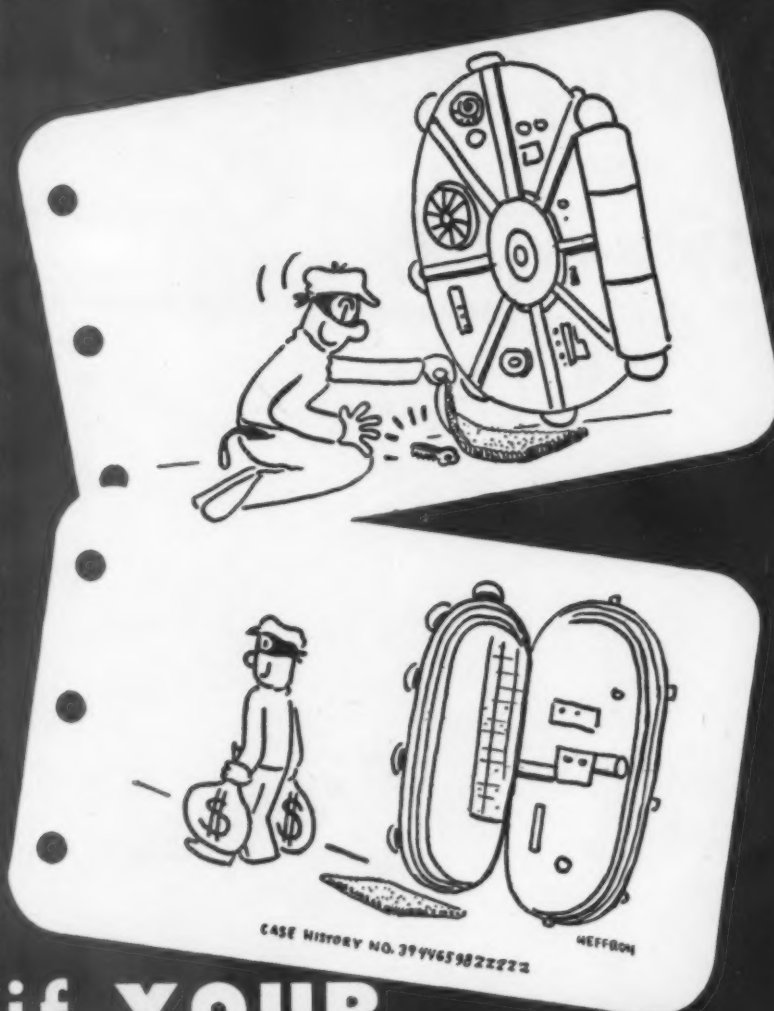
City _____

Zone _____

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INGENUITY

can solve any problem



if **YOUR**
PROBLEM involves the
higher production of threaded parts
HY-PRO TAPS

HY-PRO

TOOL CO.

NEW BEDFORD, MASS., U.S.A.

Subsidiary of
Continental Screw Co.

can help you
to a solution

Order from your distributor
or call the HY-PRO SALES ENGINEER

Metal Work Bench



Natkin & Company, 1601 S. Hanley Rd., St. Louis, Mo., offering its line of benches, tote-tables, etc. to industry in general for the first time, has announced the availability of its streamlined "Scotty" heavy-duty work bench. Made of heavy gage steel, it has a "Natflex" top, surface-sealed plastic base composition on strong plywood, on Model 9192. Model 9191 has a top of heavy steel. The bench is 60" long, 24" wide, 33 $\frac{5}{8}$ " high. It is finished in 2 coats of baked enamel. The bench may be bolted to the floor.

No. 111 — Use Coupon on Page 128

Step Ladder For Use With Stock Carts



This 4-step ladder, designed for use with stock carts, has hangers that are adjustable for push bar heights from 30" to 38". It is mounted on ball-bearing casters for easy movement without lifting. With the stock clerk on the ladder, the weight makes the casters automatically retract, putting two rubber tipped legs into firm contact with the floor. Called "Stockart", the ladders are all steel with $\frac{3}{4}$ " steel tubing frames and expanded steel non-slip steps. Made by Ballymore Company, Wayne, Pa.

No. 112 — Use Coupon on Page 128

(Please turn to page 144)



GLOBE ALLOY STEEL TUBES



When you specify GLOBE you get the finest, because Globe *specializes* in the production of steel tubes. For more than thirty years Globe *specialized* research, engineering and manufacturing facilities have assured customers of uniform high

quality in alloy steel tubes for pressure or mechanical applications.

GLOBE STEEL TUBES CO., Milwaukee 46, Wis.

Chicago • Cleveland • Detroit • New York • Philadelphia
St. Louis • Denver • San Francisco • Glendale, Cal.

Producers of Globe seamless stainless steel tubes — Gloweld welded stainless steel tubes — alloy — carbon — seamless steel tubes — Globeiron (high purity ingot iron) seamless tubes — Globe Welding Fittings.

**GLOBE SEAMLESS TUBES
FOR MAXIMUM STRENGTH
AND MINIMUM WEIGHT**

TYPICAL ANALYSES:

Carbon Moly.

1-1/4 Chrome 1/2 Moly • 1-3/4 Chrome 3/4 Moly

2 Chrome 1/2 Moly • 2-1/4 Chrome 1 Moly

5 Chrome 1/2 Moly • 7 Chrome 1/2 Moly

9 Chrome 1 Moly

AISI 1335 • AISI 2317 • AISI 2512 •

AISI 4130, 4140 • AISI 4615 • AISI 8615,

8620, 8630, 8635, 8640 • 7% Ni. • 9% Ni.

TYPICAL APPLICATIONS

Pressure Tubes — Superheater

Tubes — Condenser Tubes — Still

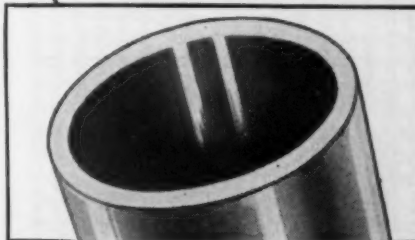
Tubes — Evaporator Tubes —

Barrel Tubes — Oil-Well Pump

Barrels — Mechanical Tubes —

Aircraft Tubes — Rollers for Trans-

mission Chains



Pierced from solid steel billets . . . with no seams or welds. Globe seamless tubes are available in many sizes and wall thicknesses for exacting applications.



AMERICAN SAW
& MFG. COMPANY
SPRINGFIELD 1, MASS.
"The Tools in the Plaid Box"

Sander and Grinder Has Tilting Spindle



Kindt-Collins Co., 12653 Elmwood Ave., Cleveland, O., says its new Master sander and grinder is the only one of its type that has a tilting spindle rather than a tilting table. The job is always in a horizontal position. The spindle can be used oscillating or non-oscillating, can be tilted up to 45°, and can be locked in place at any position. A core box attachment produces straight and tapered coreboxes mechanically, eliminating tedious handwork and materially reducing the time involved.

No. 113 — Use Coupon on Page 128

More Safety, Press Speed With Automatic Loader



Increases of from 10% to 60% in punch press speeds on redraw operations over hand feeding are claimed for the Lodac, called a new concept of automatic punch press loaders. Greater safety is gained since the operator is removed from the press feed job. Mechanical "fingers" pick up parts after first draw and feed one or more consecutive redraw presses at speeds up to 1200 parts per hour. Similar "fingers" remove the parts from the press to feed them on another conveyor to feed further press operations. In actual operation, for a

(Please turn to page 148)

Sawyer's
NEOPRENE LATEX
PROTECTIVE
WEAR
SPLASH • SMEAR
SOAKAGE-PROOF



complete PROTECTION AGAINST

ACIDS & ALKALIS • OILS & GREASES

highly resistant to

SCUFFING • SCRAPING • SNAGGING

stays FLEXIBLE when cold

does NOT get STICKY when hot

Sawyer's exclusive saturation-coating process ensures perfect bonding of 100% DuPont Neoprene Latex with top quality base fabric because it coats both sides and bonds right through the fabric.

You'll find Sawyer's Frog Brand industrial suits, coats and aprons the best buy on the market. Same styles in Rubberized or Oiled fabrics. Colors: Black or Yellow. Write for illustrated catalog.

The H. M. SAWYER & SON CO.
Cambridge 41, Mass.

WHEN **POWELL VALVES** GO IN, MAINTENANCE **GOES OUT!**

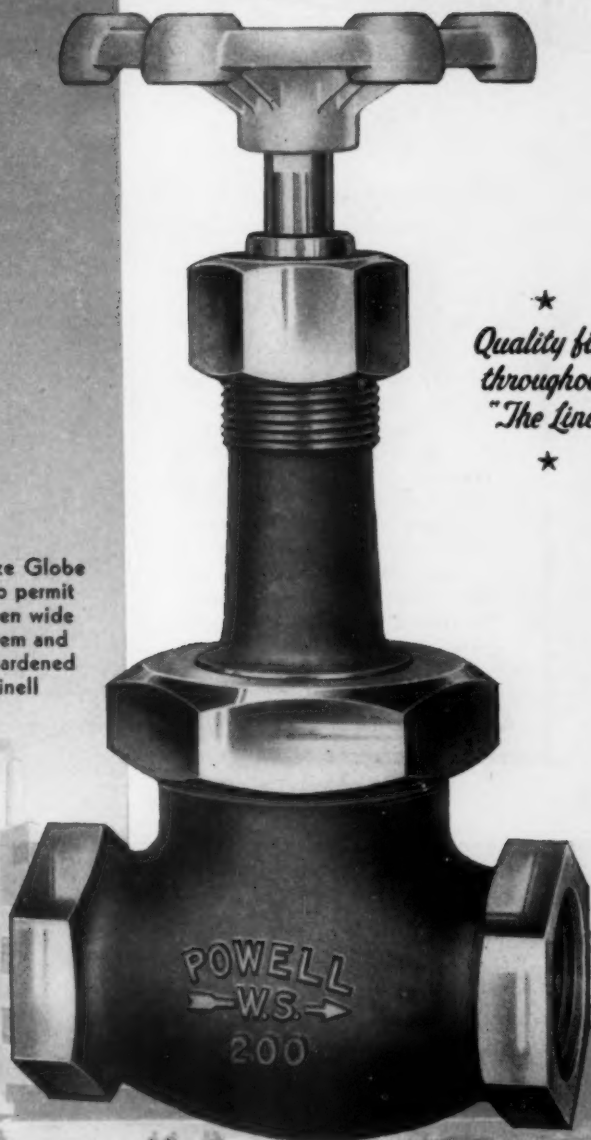
With today's urgent need for maximum production, why take a chance on any valves that require constant attention?

By installing Powell Valves—built for perfect performance with minimum maintenance—you can stop worrying about your flow control equipment.

Gate, Check, Globe and Y Valves, in Bronze, Iron, Steel and Corrosion-Resisting Metals and Alloys

Fig. 2608—200-pound Bronze Globe Throttling Valve, designed to permit full flow through the seat when wide open. Has special bronze stem and stainless steel disc and seat hardened to approximately 500 Brinell

★
*Quality fine
throughout
"The Line"*
★



POWELL

The WM. POWELL CO., 2525 Spring Grove Ave., P. O. Box 106, Station B, Cincinnati 22, Ohio

CUTTING YOUR COST ON

Stampings



The STAMPINGS DIVISION

of the Laminated Shim Company is equipped to produce anywhere from one to several million stamped parts. Whatever the quantity, we have the equipment and experience to choose the most economical stamping technique without partiality.

Given full information by our customers, we carefully study the costs of appropriate methods — to your profit.

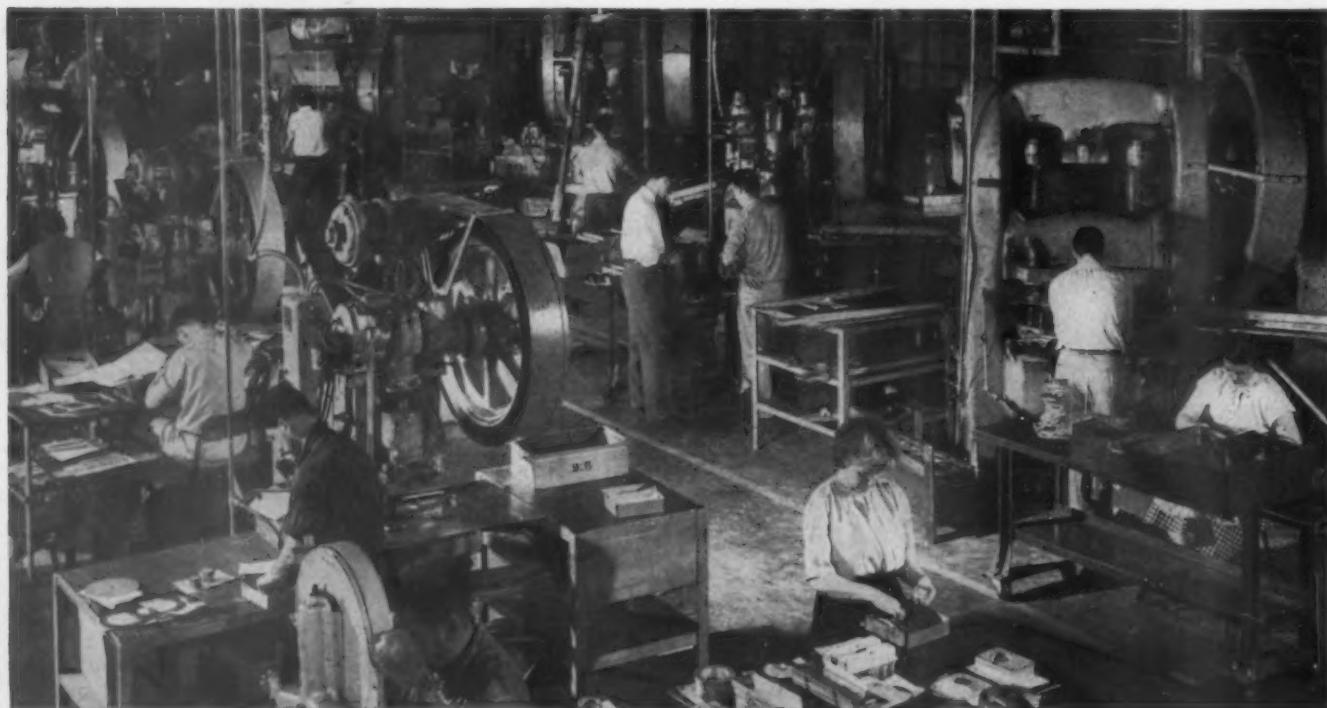
**RECOMMENDED BY 1500
CURRENT, ACTIVE CUSTOMERS**

**YOU SAVE MONEY WHEN YOUR
SUPPLIER IS FULLY EQUIPPED FOR
THE MOST EFFICIENT METHOD**

For MINIMUM UNIT COST — The Production Method

The Production Method is used whenever the cost of very fine dies can be spread over enough pieces to result in a low unit cost. A first-class tool and die shop plus a wide range of efficient presses are our secret of economical production.

A new hope for further reduction in costs is our own newly developed Hecht-type die. Although not yet universally applicable, the low cost, but permanent, Hecht tools are already saving thousands of dollars for our customers by slashing the costs of standard dies.



For LOW TOOL EXPENSE — Our Short Run Method

For runs of lesser quantity where contour and material are suitable, inexpensive temporary-type dies are used to blank contours. Bolt holes and interior diameters are added in separate press operations. Special purpose presses, custom-adapted for this type of work are what make the STAMPINGS DIVISION a strong competitor in this field where original techniques are so important.

For best planning, we should be informed of your total requirements of a given part, not just your immediate needs. This is important in determining at the pooling stage whether the Production or Short Run Method will be more economical over the life of the part.



Modern, Fully Equipped Tool and Die Shop

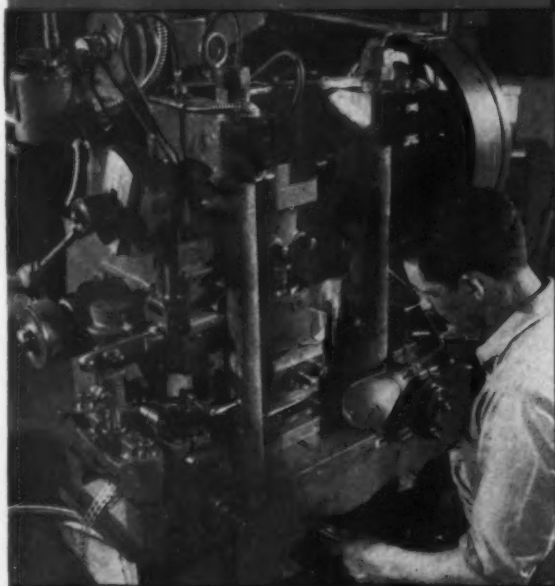
To AVOID DIE COST COMPLETELY — Our Machine-Cut Method

The economical way to produce from 1-100 parts is our dieless duplication by the Machine-Cut Method, a STAMPINGS DIVISION specialty. Contour sawing, rotary shearing, bending and grinding equipment is used rather than normal stamping equipment. The only dies used are right from our immense stock, on hand for your use. Here is a valuable low cost service on small volume, experimental or pilot orders.

QUALITY CONTROL AVOIDS REJECTS

Careful and complete checking against blueprint specifications shields our customers from the schedule disruptions caused by rejected orders. Our Quality Control Department operates in addition to the usual visual inspection routines of most stamping houses.

Our plant is an approved source for many of the most particular purchasers in industry.



*Low Cost Production
Requires a Full Range
of Press Capacities and Speeds*

STAMPINGS DIVISION

LAMINATED SHIM COMPANY, Inc.

2410 UNION STREET

GLENBROOK, CONN.

Manufacturers of the famous **TAMNUM** shims that peel for adjustment

MATERIALS AND PRESS CAPACITIES

We offer stampings in brass, steel, aluminum, copper, plastic, special alloys — any material that can be punched. Press capacity to 100 tons, 24 inches square, with shallow draw to $\frac{3}{4}$ " depth.

FREE!

12 PAGE BOOKLET
"SERVICE IN STAMPINGS"

Full of helpful facts
on buying stamp-
ings. Profusely il-
lustrated.



STAMPINGS DIVISION, LAMINATED SHIM COMPANY
2410 Union Street, Glenbrook, Conn.

Gentlemen: Please rush me my free copy of "SERVICE IN STAMPINGS".

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Company _____

Street _____

City _____ Zone _____ State _____



Now! **KEX PUTS SAFETY MESSAGES RIGHT INTO YOUR EMPLOYEES' HANDS**

HERE'S AN ADDITIONAL KEX SERVICE that ties in with your *Safety Program*—flashes its messages to the employee right at a place *where accidents happen*. And builds better employee relations.

Now a percentage of KEX® towels have printed on them safety slogans such as—Work Safely—Apply More Caution; Alert Today—Alive Tomorrow; Always Alert—Nobody Hurt; to mention a few.

In these days when skilled hands are so important, KEX puts into them not only a wiping tool that does a faster, more efficient job, but which also helps protect them.

INVESTIGATE KEX NATIONAL SERVICE—the smooth-flowing service that means regular delivery of industrial wiping towels, in any desired quantity, that are hygienically clean, uniform in size, weight and quality, are highly absorbent, and simplify plant housekeeping.

No investment. Nothing to buy. Only a low rental charge per towel. *And your source of supply of KEX safety towels is automatically assured!* Look for your local KEX distributor in your classified phone book. Or write—



"KEX"
* **REG. U.S. PAT. OFF.**

**NATIONAL
SERVICE**

295 Fifth Ave., New York 16, N. Y.

(Continued from page 144)

single redraw, press speeds have been increased from 540 to 1,040 pieces per hour. Made by Magnaflux Corporation, 5900 Northwest Highway, Chicago, Ill.

No. 114 — Use Coupon on Page 128

Variable Work Stations Speed Assembly Jobs



Assembly line operators don't have to turn around to bins and tables behind them when these work stations are used. Because parts can be loaded from the rear of the work station, the operator is constantly supplied with components without being interrupted. Tailor-made, they can accommodate various types of large and small assemblies. Called Electrosembly work stations, they incorporate two main components: large flat wire baskets for the accessible storage of fabricated parts and sub-assemblies, and plastic cups placed on both sides of a revolving frame to contain screws, nuts and small parts. The baskets can be moved to meet production demands. Made by the Coleman-Pettersen Corp., 2148 St. Clair Ave., Cleveland, O.

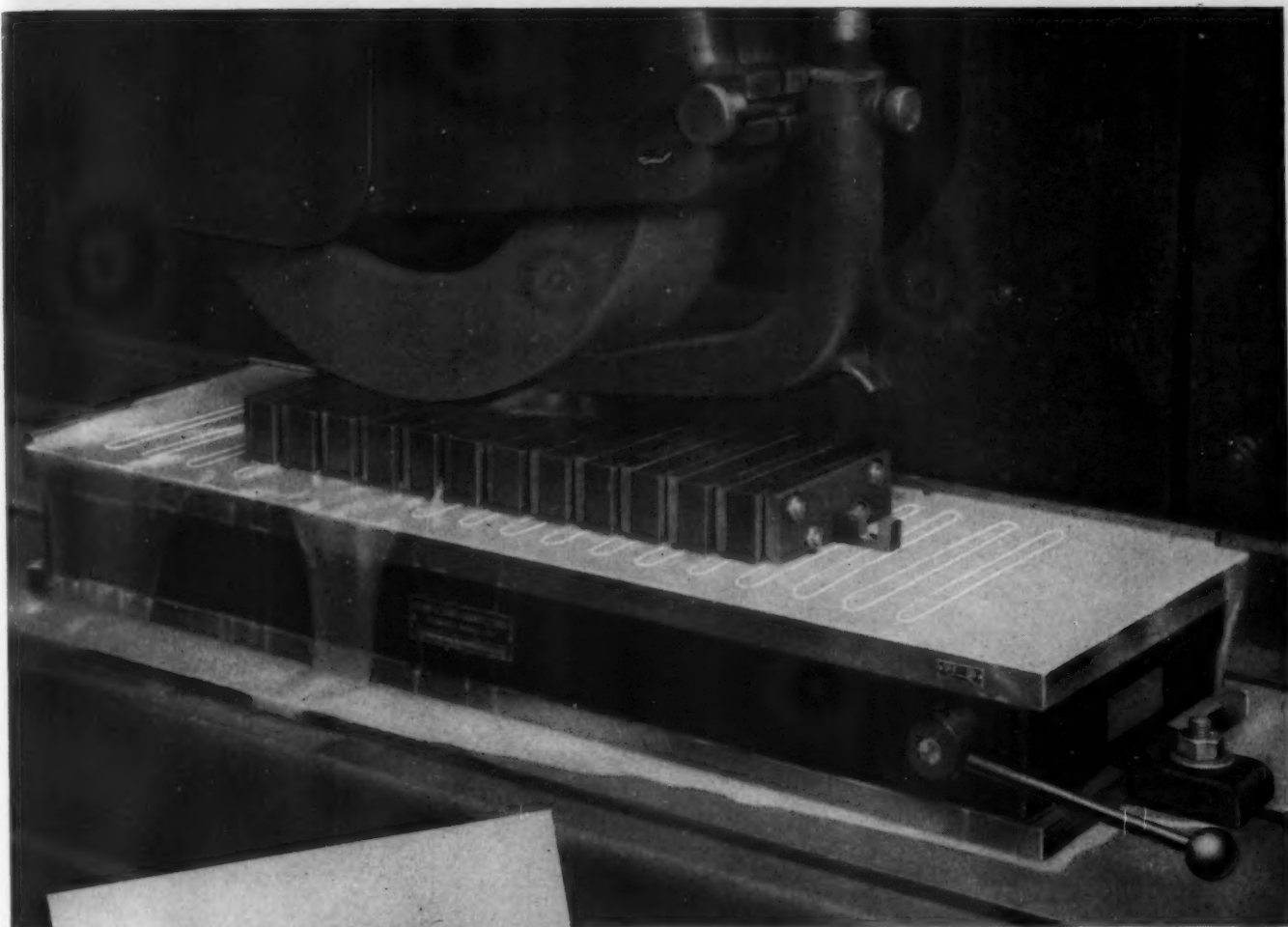
No. 115 — Use Coupon on Page 128

One-Hand Portable Fire Extinguisher

Newest Redi-Grip fire extinguisher of Stop-Fire, Inc., 125 Ashland Pl., Brooklyn, N. Y., is a pressurized portable unit that features one-hand operation. The extinguisher may be released from its bracket and operated with one hand, while a safety-lock prevents accidental discharge. It is available in 1, 2½ and 4 quart sizes with a combination of charges — CBM (chlorobromomethane) or carbon tetrachloride, individually or in combination. The expellant may be air or carbon dioxide. Its range exceeds 30 ft. and the discharge time of the 1 qt. size is about 27 seconds at 70F. Approved by Underwriters' Laboratories.

No. 116 — Use Coupon on Page 128

(Please turn to page 150)



*Economical
way to save
machinists'
time*

PERMANENT MAGNET CHUCKS

by Brown & Sharpe make the most of a skilled machinist's time — let him do, speedily, many tasks that require extra work by other means.

These economical time-savers are completely portable, have no wires to connect, cost nothing to operate, hold as long as desired without heating, last indefinitely. Permanent Magnet Chucks speed setting up . . . eliminate the need for clamps, vises, jigs or fixtures on many jobs. A quick shift of a lever engages or disengages magnetic holding power.

Complete line includes Rectangular Models for grinding, inspecting, light machining; and Rotary Models for light lathe work, cylindrical and face grinding. Rectangular Models available in 8 sizes from $2\frac{7}{16}$ " x $5\frac{1}{4}$ " to $12\frac{1}{8}$ " x 36"; Rotary Models in 5", 7", and 9" diameters. For sale only in the United States and its territories. Write for catalog. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

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UNIVERSAL Flexible METAL HOSE

for Conveyance of gases, liquids, semi-solids, dust, etc.
—for moisture-proof armored conduit and control casings—and many other applications

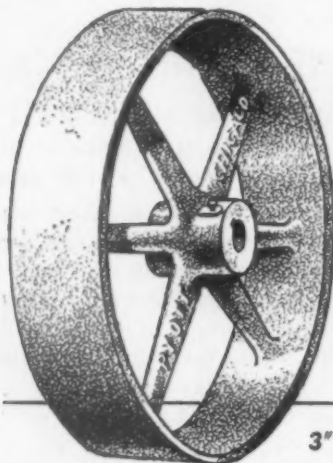


Write for
CATALOG U-101—Just Published

UNIVERSAL METAL HOSE CO.

2159 South Kedzie Avenue

Chicago 23, Illinois



**CALL ON
PYOTT
for Cast Iron
PULLEYS**

3" to 102" DIAMETERS

Pyott can meet your cast iron pulley requirements promptly. Available types include split and solid hub, single and multiple arm, wide and narrow face, flanged, tapered and step cone as well as tight and ball bearing loose pulleys. All are perfectly balanced and may be operated at running speeds up to 6000 FPM, depending on diameter and type of pulley. Pyott Cast Iron Pulleys are machine molded up to 72" diameter and 24" face width. Larger sizes or unusual designs floor molded, requiring no patterns from pulley user. With your inquiry, send a dimensional sketch and indicate your delivery requirements.

Catalog available on request

PYOTT FOUNDRY & MACHINE CO.

Established 1896 • 337 N. Sangamon St., Chicago 7, Illinois

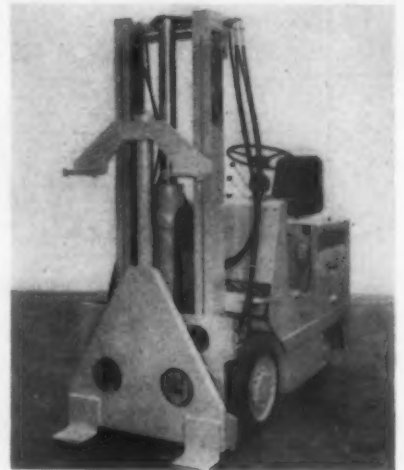
Lock Unit Prevents Dock Board Slippage



Magline, Inc., Pinconning, Mich., has a new drop lock for its magnesium dock board and ramp combinations which prevents slippage. The lock is incorporated into the ramp section of the unit and automatically drops into place against the dock, securely holding the unit in position during loading operations. It provides positive lock action and eliminates any possibility of board slippage, Magline states.

No. 117 — Use Coupon on Page 128

Clamp Handles Large Crates Without Pallets



Lift trucks used to handle large boxed or crated products like refrigerators can now do the job without the use of pallets. Yale & Towne's Philadelphia Division, 11,000 Roosevelt Blvd., Philadelphia, Pa. has brought out a hydraulically operated clamp which handles two objects up to 75" high and 36" wide each and stacks them 17" high simultaneously. The clamp is available on practically any capacity Yale gasoline powered or electric industrial truck. The truck used in tests of the clamp (3000-lb. capacity electric truck) is also equipped with a hydraulic side shifter which permits the load to be shifted 4" to either side of center.

No. 118 — Use Coupon on Page 128

(Please turn to page 152)

STOP

FREE SURVEY: Place your rust problems in the hands of a RUST-OLEUM specialist. He will survey your plant for all rust problems, submit detailed recommendations, and make specific tests.

You can stop rust with RUST-OLEUM! An exclusive formula proved in a wide range of industrial and marine applications for more than 25 years. Its tough, pliable film dries to a firm rust-resisting coating that protects against rust—cuts maintenance costs—adds years of use to many metal surfaces, indoors and outdoors.

RUST-OLEUM may be applied over rusted surfaces without removing all the rust, assuring substantial savings in preparation time... It is only necessary to remove all the rust scale and loose rust.

Prompt delivery from Industrial Distributor stocks in principal cities. See *Sweets* for complete catalog and nearest source of supply, or write for complete literature on your company letter head today!

Beautifies AS IT PROTECTS

Available in many
COLORS,
aluminum and white



RUST

RUST-OLEUM CORPORATION

2431 Oakton Street, Evanston, Illinois



"Rigid Economy, Mon"



WATER COOLERS

Feature-packed for Sanitary Refreshing Cool Water



SANITARY TOP—The lustrous, gleaming top is easy to keep clean. Scientifically designed to prevent spillage. No crevices or corners to collect bacteria.



ANGLE STREAM, NON-SQUIRT BUBBLER—Stream angled to avoid water dripping back on nozzle from lips. Guard shaped to prevent contact of lips with nozzle.



COLD WATER RESERVOIR—Protects purity of water, does not give water metallic taste. Connection at rear of cooler for use when remote bubbler is desired.



SEALED REFRIGERATION SYSTEM—Efficient, dependable. Tamperproof and trouble-free. Double wall protection between refrigerant and drinking water.



HANDSOME, COOL GREEN, ALL-STEEL CABINET—Tough, wrinkle finish easy to clean—avoids fingerprint smudges. Design blends with modern office furniture.



SURE-TREAD FOOT PEDAL CONTROL—Avoids transfer of germs from user's hands to bubbler. Permits drinking when hands are full. Located to prevent toe scuffing.



FREE! 24 PAGE BOOK

General Electric Company, Section P-10
Air Conditioning Department, Bloomfield, N. J.

Please send without obligation to me the fully illustrated book, "Water at Work."

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CITY ZONE STATE

You can put your confidence in—

GENERAL ELECTRIC

3-Position Indicator

Operators must often know mechanical relationships, settings, and positions of their equipment, which are not always accessible for inspection. To meet this need, Keystone Watch Case Divn., The Riverside Metal Co., Riverside, N. J., offers a remote-reading 3-position indicator. It consists basically of a rotating card which exhibits one of three printed symbols at a round observation window in one end of the instrument. The card is rotated by two solenoids, which can be actuated by any of a variety of commonly used float, pressure, or contact switches. The unit is light (2½ oz.), compact, and will function under unusually severe conditions. Symbols can be designed to meet requirements of a particular job.

No. 119 — Use Coupon on Page 128

Hoist-Binder Works On Ratchet Principle

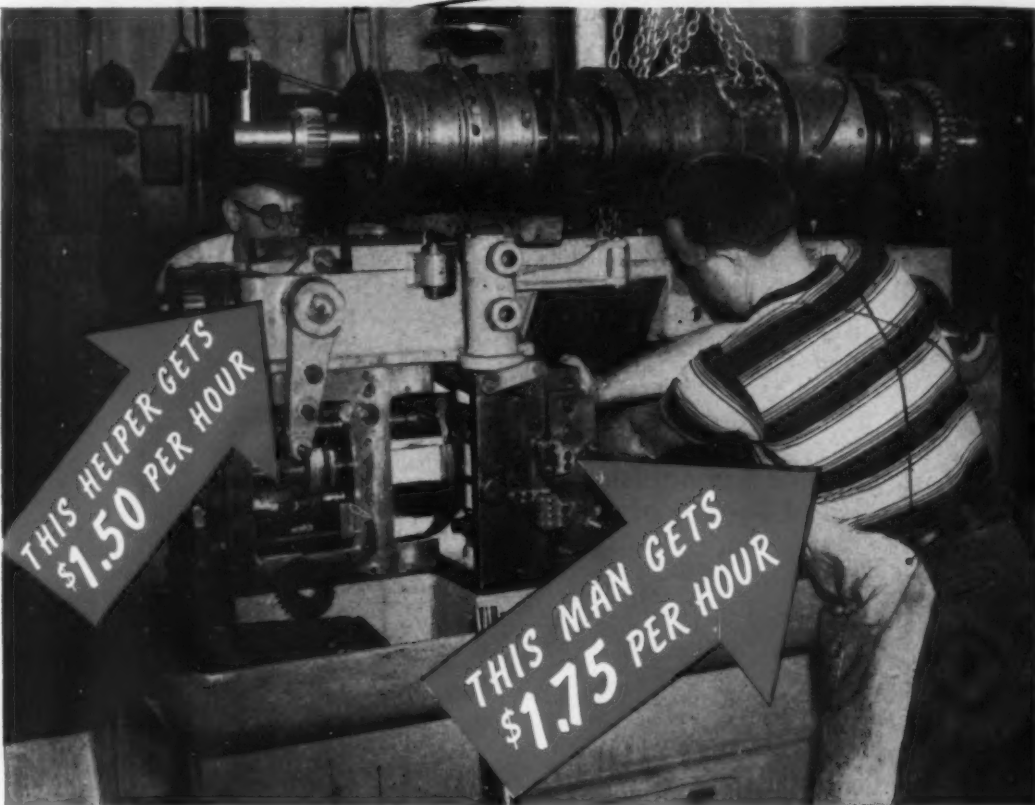


A new hoist-binder of Coffing Hoist Co., Danville, Ill., works on the ratchet hoist principle—allowing it to take up or slack off a load chain any amount up to a full 20½" or more if a longer chain is used in the binder. Coffing says this advantage over eccentric type binders is especially important with "springy" loads where the binding chain or cable must be tightened by force through considerable distance in order to fully secure the load. If a load settles in transit, the new unit is easily tightened any amount without the necessity of releasing the entire load to take a new "grab". The hoist-binder weighs only 10 lb. and will exert a pull of 3,000 lb.

No. 120 — Use Coupon on Page 128

(Please turn to page 154)

DON'T BE PENNY WISE *and* DOLLAR FOOLISH WHEN IT COMES TO GEARS



Down time (for disassembly, gear replacement, reassembly) — 4 hrs. minimum **\$13.00**

Loss of 4 hrs. profit and overhead on this job **\$48.00**

Sixty dollars lost because they "saved" ten per cent on a \$10.00 pair of gears by buying inferior gears that quickly wore out and had to be replaced by BOSTON Gears **NET LOSS \$60.00**



Standardize on
Stock Boston Gears

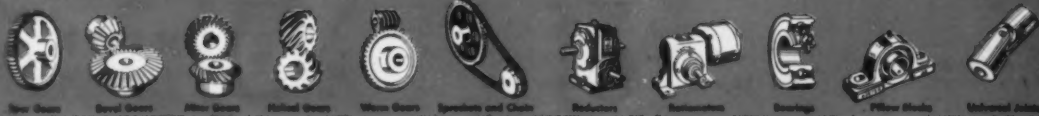
Design them into
your equipment

Always specify them
for replacements

BOSTON GEAR WORKS

76 HAYWARD ST., QUINCY 71, MASS.

For information and prices on over 2000 types and sizes, consult Boston Gear Catalog No. 55. Free copy on request.



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Bearing Distributors, Inc.
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- ATLANTA, GEORGIA
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Cores, Mfg. & Sup. Co.
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- DAYTON, OHIO
Klinger Ditz
- DENVER, COLORADO
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Standard Bearings Co.
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*Branch office and stock

introducing



the Coffing COIL CHAIN

SAFETY-PULL

RATCHET LEVER HOIST

The Model R is now available in 1,500- and 3,000-lb. capacities — other sizes will follow.

*Advanced Guard for a
New, Advanced Line*

Here is a completely new ratchet lever hoist designed to bring you added safety and convenience. The Model R incorporates the time-proved ratchet and pawl principle originated by Coffing — makes it hold positively at all times — no friction-type brake to slip or freeze — chain is free wheeling when not under load.

Many New Advantages

COIL CHAIN Swings or wraps in any direction for greater flexibility in use.

SIX OPERATING POSITIONS Handle operates in any position, works on full or partial strokes — for ease of handling in close quarters. Safety stops prevent spinning of handle.

SAFETY FACTOR OF FIVE All hoist load-holding parts designed to withstand pull equal to five times rated capacity. Each hoist also factory tested at 100 percent overload. "Safety-valve" handle bends at point of maximum safe overload.

SIMPLE TO SERVICE The Model R may be completely disassembled with only a screwdriver for easy servicing. Not necessary to return it to the factory for repairs.

• Find out more about the hoist that gives you greater convenience and safety in all lifting, pulling, stretching. Write for Bulletin Z10R.

**COFFING HOIST
COMPANY**

Danville, Illinois



Quik-Lift Electric Hoists • Hoist-Alls • Load Binders
Mighty-Midget Pullers • Spur-Geared Hoists
Differential Chain Hoists • I-Beam Trolleys

Sold by Industrial Distributors everywhere

Heavy Duty Pantograph Cutting Machine

Latest addition to Air Reduction's line of gas cutting machines is the Airco No. 50 Travograph, a heavy duty pantograph type. Guided by manual, magnetic or electronic tracer, it will cut an unlimited variety of shapes from steel plates, slabs, billets and forgings. Airco says it makes equally practicable and economical the cutting of either one or a few parts or identical parts on a quantity production basis. Among its features: all-welded, heavy gage steel for strength; rigid tail assembly with smooth runway for the carriage; guide rollers on the carriage base to keep the carriage on a true, vibration-free course. Flame hardened carriage wheels insure long service life. Air Reduction is at 60 East 42nd St., New York, N. Y.

No. 121 — Use Coupon on Page 128

Fire Extinguishment Head Uses Water Better



Rockwood Sprinkler Company's latest development in fire extinguishment is the T-Head, for use in fixed piping systems. It can be used as either a sealed or open head. The sealed head combines the principles of Rockwood's WaterFOG with the figure 4 fusible element of its regular sprinkler head. Design of the T-Head breaks up the water into a fog pattern fine enough to completely fill the area from the ceiling to the floor, and heavy enough to drive the particles down to any fire on the floor. Wide angle distribution of the head prevents gas or flame from rising, and from mushrooming and needlessly opening adjacent heads. Rockwood is at 38 Harlow St., Worcester, Mass.

No. 122 — Use Coupon on Page 128

(Please turn to page 156)



**B-RIGHT-ON
has it!**

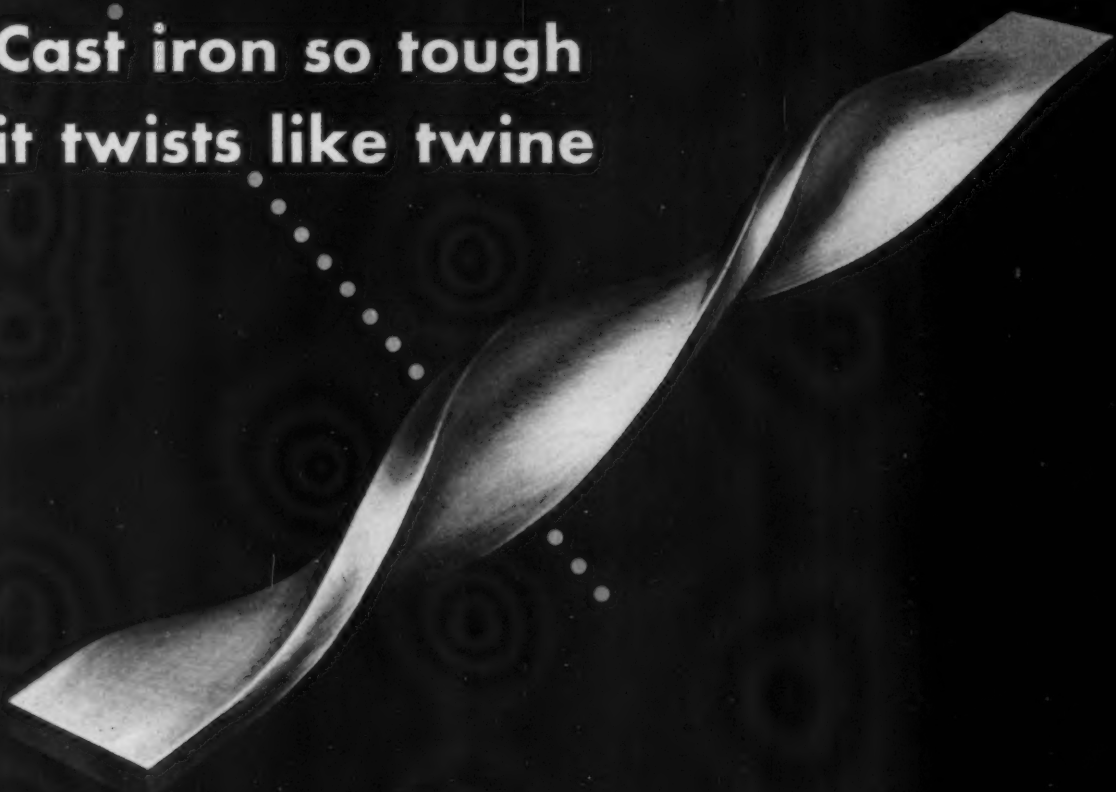
- Special Alloy Steel
- Fine Compact Grain
- Accurate Forming
- Uniform Quality
- Great Strength
- Right Temper
- Smooth Finish
- Close Tolerances

You'll find all the features you're looking for in Brighton Socket Screw Products.

Get the facts on Brighton Nu-Process and Uni-Quality! See your nearest mill supply house or write for detailed catalog.

BRIGHTON
SCREW & MANUFACTURING CO.
18-29 Reading Road, Cincinnati 2, O.

Cast iron so tough it twists like twine



Ductile Iron — A New Metal . . . Offers New Possibilities To Industry!

Unlike many irons, you can bend it, twist it, hit it or heat it and it stands up. Ductile iron is tough. It is stronger than mild steel. This remarkable metal possesses the desirable qualities of cast iron together with many of the advantages of steel. It frequently replaces steel in applications, such as gears, crankshafts, pressure castings, dies and pipe at a lower cost.

Ductile iron may be cast in large or small castings in intricate shapes that are difficult or impossible to cast in steel. It can be cast with a fine surface and to close tolerances. It can have the

unique property of combining a chilled surface with a tough ductile core which gives it excellent abrasion resistance and considerable shock resistance. It can be welded to iron, or steel in a strong, tough bond. It has good machinability.

The potential uses of ductile iron are nearly endless because it combines a wide range of properties with a competitive cost. Our engineers will be glad to work with you in finding how ductile iron may be applied to your problem. Write Department P American Brake Shoe Co., 230 Park Avenue, New York 17, N. Y. for literature on ductile iron.



AMERICAN
Brake Shoe
COMPANY
230 PARK AVE., NEW YORK 17, N.Y.

10 Divisions of American Brake Shoe Co. produce wear-resisting parts in 55 American and Canadian plants.
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BEALL SPRING WASHERS



TIGHT
when assembled



TIGHT
in service



TIGHT
after long service

KEEP BOLTED ASSEMBLIES permanently **TIGHT**

BEALL helical SPRING WASHERS have "live action" and constantly exert tightening pressure over a long range. They compensate for ALL causes of looseness including vibration, bolt stretch, wear and breakdown of finish under the nut and bolt head. IN STOCK in all Standard Sizes; made of Carbon Steel, Stainless Steel, Everdur, Duronze, and other metals. Manufactured to the exact dimensions specified by the American Standards' Association.

SPRING WASHER SPECIALISTS for 30 years

BEALL TOOL DIVISION of HUBBARD & CO.

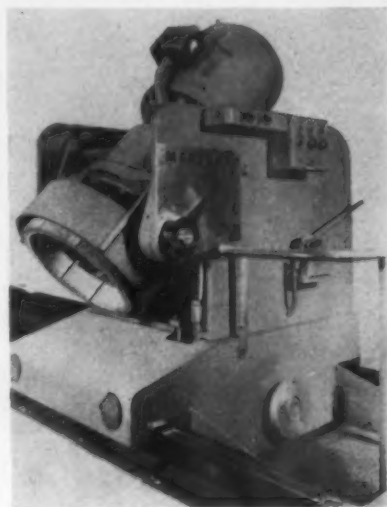
160 Shamrock St. • East Alton, Ill.

Continuous Moisture Detector

A continuous moisture detector developed by the Plywood Research Foundation, research group of the West Coast plywood industry, now solves the problem of detecting and controlling excess moisture in the manufacture of wood products and other materials. It automatically rejects or marks the material at or above any given degree of moisture content. Initially available to furniture and veneer manufacturers, it can be adapted to virtually any manufacturing process where moisture is a problem. Called the Sentry, the instrument is being marketed by Laucks Sentry Products, 4441 Stuart Bldg., Seattle 1, Wash.

No. 123 - Use Coupon on Page 128

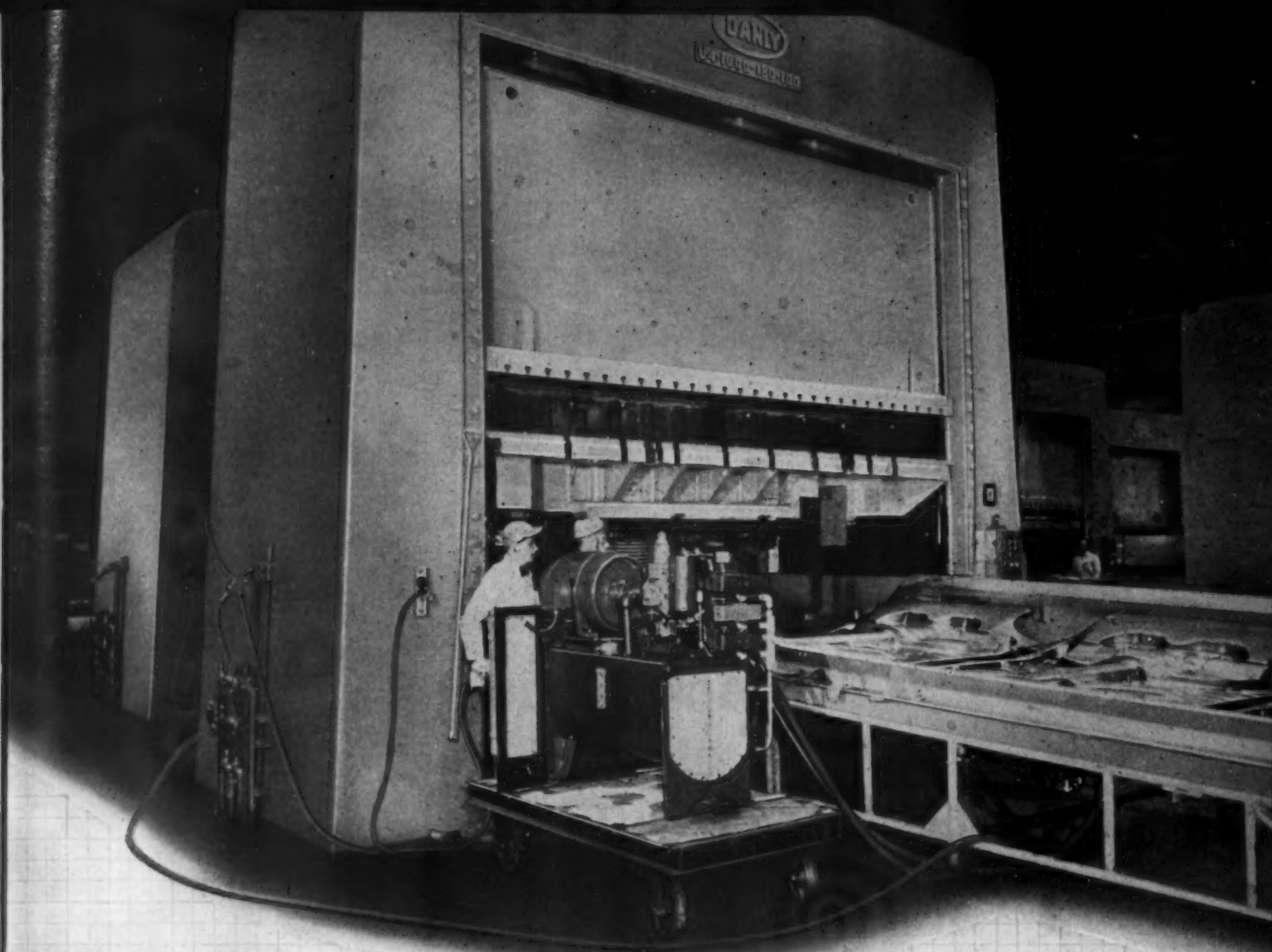
Low Maintenance Cost Traveling Head Grinder



Mercury Engineering Corp., 2100 N. Farwell Ave., Milwaukee, Wis., says its Series E-20 traveling head grinder offers a totally new approach to the problems of face grinding. Designed for grinding of armor plate, it is said to afford new opportunities in grinding edges, angular surfaces, compounds and bevels, as well as machining pads on heavy castings 20 ft. or longer. The new machine eliminates the expensive and hard-to-maintain traverse bed common to conventional traveling head grinders. The grinder runs on self-powered precision rollers along rails with built-in leveling devices. It employs a 20" face-type grinding wheel mounted on a head which tilts from horizontal to full vertical, thus has complete mobility with traverse rate continuously variable.

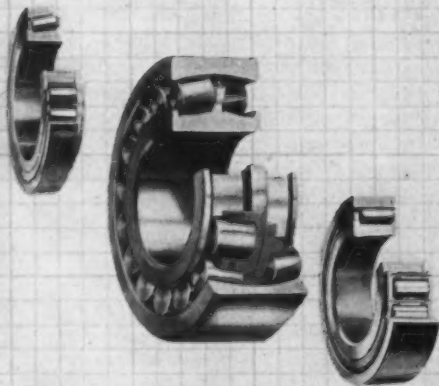
No. 124 - Use Coupon on Page 128

(Please turn to page 158)



at Ford's new Buffalo plant

...Danly Presses are
Torrington Bearing-Equipped



At the Ford Motor Company's new Buffalo plant, several Danly Underdrive Presses—ranging from 600 to 1000-tons capacity—are producing stampings for Ford, Lincoln and Mercury cars. In each press, nine Torrington Bearings team up to deliver smooth ram power and help reduce press downtime.

Spherical, Tapered and Radial Roller Bearings, and NCS Type Needle Bearings, are used in the driveshaft assembly and intermediate gear driveshaft of the new presses, which embody the latest developments for high-speed production and easy maintenance.

Why not include the advantages of Torrington Bearings in your equipment. Our engineers will be glad to help you.

THE TORRINGTON COMPANY

South Bend 21, Ind.

Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON BEARINGS

SPHERICAL ROLLER • TAPERED ROLLER • STRAIGHT ROLLER • BALL • NEEDLE • NEEDLE ROLLERS



can old age
"cripple" your
important drawings?

Not if you put them on Arkwright Tracing Cloth. Arkwright Cloth is the best insurance you can get that your drawings will never become brittle or opaque with age — never get paper-frayed around the edges to spoil your work.

Arkwright's extra quality shows right from the start. You can re-ink clean, razor-sharp lines on Arkwright Tracing Cloth over the heaviest erasures without feathering or "blobbing". And you can get clean, clear blueprints — if you need to — for years and years to come.

All good reasons for you to remember: if a drawing is worth saving, put it on Arkwright Tracing Cloth. Write for samples now to Arkwright Finishing Co., Industrial Trust Bldg., Providence, R. I.

ARKWRIGHT
Tracing Cloths

AMERICA'S STANDARD FOR OVER 30 YEARS



Floor-Surfacing Compound Sets In 15-30 Minutes

With production time at a premium these days, maintenance men often have trouble in repairing damaged concrete floors without hindering plant work. A new patching compound, Por-Rok, is said to overcome this problem by setting in less than the average lunch period. The compound is mixed with water, poured into the opening in the floor. The patch is ready for light loads in 15 minutes, normal trucking in 30 minutes, and heaviest loads within an hour. It is self-bonding, will not shrink, and requires no troweling for a perfect finish. Made by the Hallemite Manufacturing Co., 2446 W. 25th St., Cleveland, O.

No. 125 — Use Coupon on Page 128

Machine For Small Parts Manufacturing



Simple changes in tooling set up this combination bench-type production machine for turning, milling or grinding. Called the Viking LMG-3, it features a common base, power unit, spindle, and vertical and horizontal slides to which special tooling and fixtures are added. A complete set of tooling is available for conversion, or the machine may be furnished as a single-purpose unit, where battery production-line operation is required. All attachments will operate with standard tools. One inch spindle with No. 7 B & S taper hole is mounted in heavy ball bearings. Through hole is 13/32" diameter. Made by Viking Industries, Rockford, Ill.

No. 126 — Use Coupon on Page 128

Mortar-Laying Tool

The fine art of laying mortar comes within the reach of amateurs with a new aluminum tool known as the Mortar Plane. The 1½ lb. tool will lay mortar on concrete or

(Please turn to page 162)

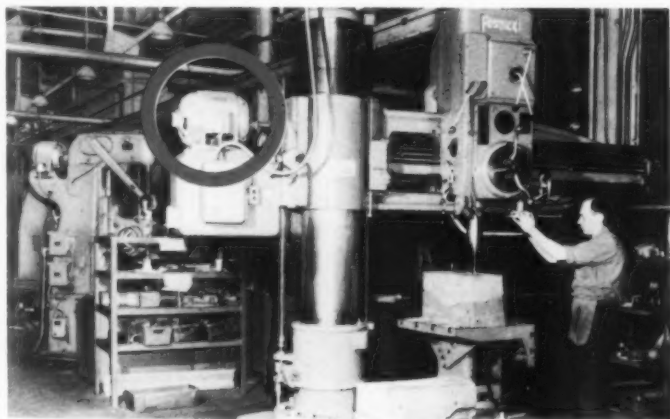


"We have three shifts in operation," says Julius J. Domonkos, Vice-President in Charge of Manufacturing, Bell Aircraft Corporation. "That's full production on a 24-hour day basis. For the past 10 years we've been depending on Tri-Clad motors to carry the load. We've never regretted putting our confidence in this fine motor!"

G-E Tri-Clad Motors drive the machines that are instrumental in producing helicopters, guided missiles, rocket motors, research aircraft, and jet aircraft engine nacelles for our rapidly expanding armed forces. At Bell Aircraft Corporation, G-E Tri-Clads are known as a thoroughly dependable motor—tough on the outside... on the inside... at the bearings.

BELL AIRCRAFT CORPORATION:

"We've been depending on Tri-Clad* Motors for Ten Years..."



This Tri-Clad driven radial drill takes care of most of the large dies for the entire Bell plant. Big dies and bolster plates are drilled and tapped on this machine, a critical part of the Bell operation. Despite continuous use, plant personnel can't remember a single interruption due to Tri-Clad failure!

*Reg. trademark of General Electric Co.



FASTEST BOMBER IN THE WORLD! Jet engine nacelles for the 600-plus miles-per-hour B-47 are being produced at a record-breaking clip in the Bell plant at Buffalo, N. Y. The "Stratojets" represent a major advance in bombardment aircraft. ➡

GENERAL  ELECTRIC



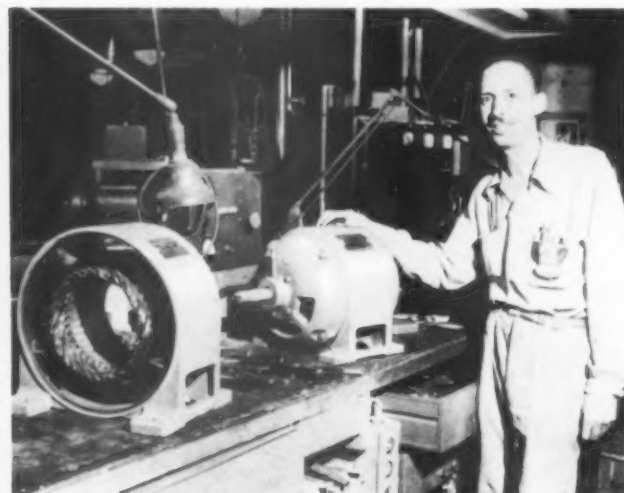
TRI-CLAD MOTORS

REG. U.S. PAT. OFF.

Help keep Bell Aircraft production up!



Marvin Limburg (left), Foreman of Bell's Tool and Die Shop, comments, "I don't believe we've ever lost machine time due to breakdown of Tri-Clad motors. And our jig-borers, for example *have been operating around the clock for the last 8 to 10 years!*"

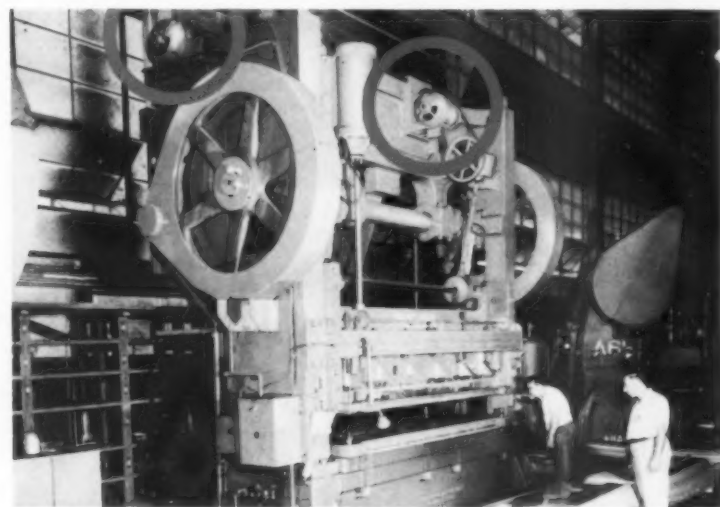


"It's the easiest motor we have to maintain" according to Maxwell Anderson, Crew Chief of Bell's motor repairmen. "There's more working room inside and more room in the slots. It's become a byword with us that if you give a Tri-Clad motor ordinary care you'll never have to worry about maintenance."

TIMELY READING—With every electric motor needed on the line, you'll want a copy of the G-E manual on "How to Maintain Motors and Generators." It's free; just ask for bulletin GET-1202. Sect. 752-10, General Electric Company, Schenectady 5, N. Y.



Greasing isn't necessary on a Tri-Clad motor in normal service, but it's always reassuring to know that you *can* lubricate if you so desire, without time-consuming disassembly. The photo shows how easy it is: remove relief plug, attach the grease gun nozzle, squirt—the job is finished.



This huge punch press is an important tool maker. Anton Geiser (right), assistant punch press foreman, says: "I can't recall a single shutdown of this section due to motor failure." Almost all motors in this department are Tri-Clad. This is another Bell Department which has been operating around the clock; cannot afford to lose time because of motor breakdown.

NEW! A Helpful Training Course on Motors!

Everyone concerned with technical training problems will want this new G-E Motor Selection and Application Course. Consists of 9 short, easily understood lessons. Complete kit—slide films, review booklets and instructor's manual—\$100.00. Call or write your nearest G-E sales office.

Look at the Scope of this Course

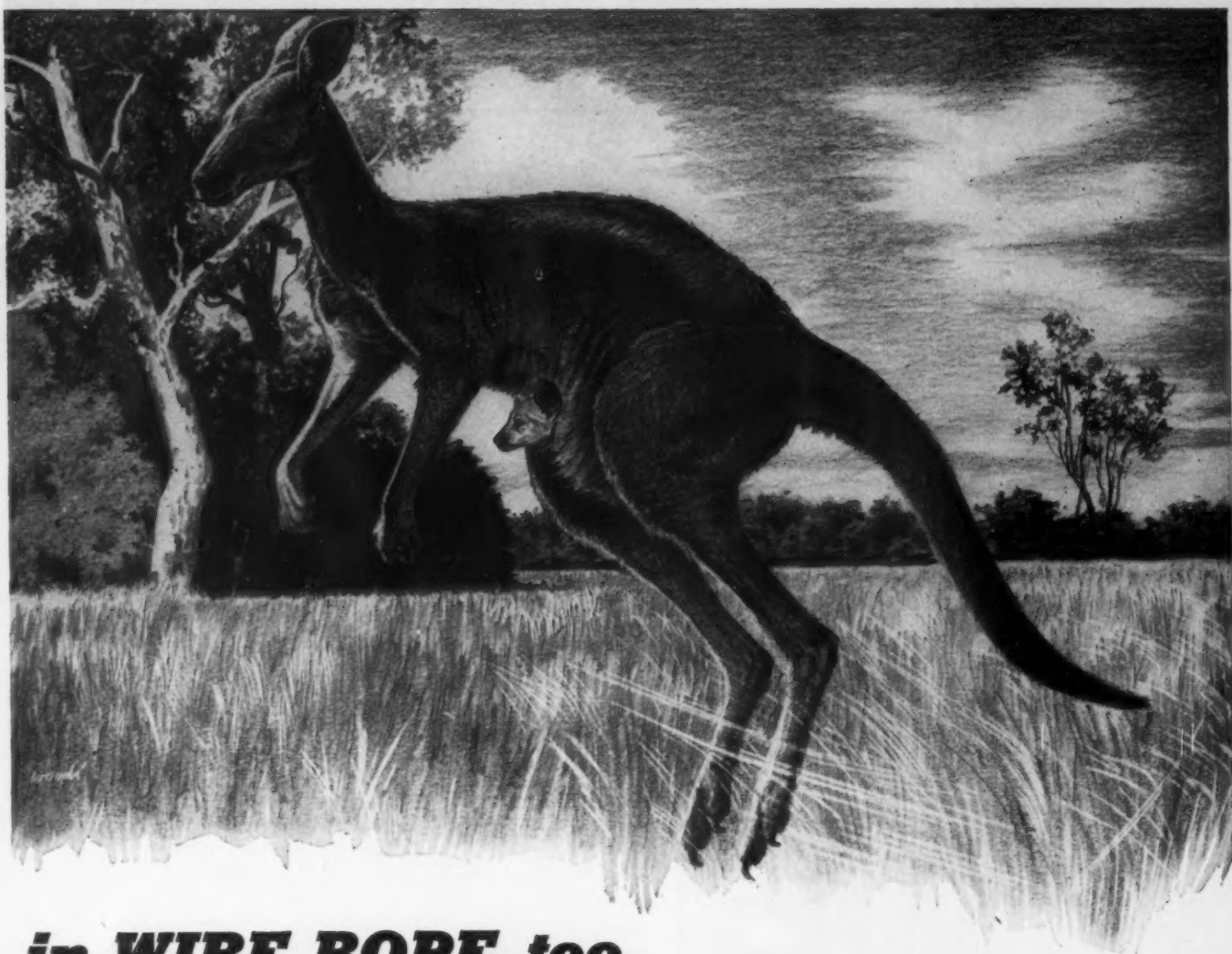


- | | |
|------------------------------|----------------------------|
| 1. Fundamentals of Motors | 5. Single-phase Motors |
| 2. Types of Motors | 6. D-C Motors |
| 2. Fundamentals of Selection | 7. Synchronous Motors |
| 4. A-C Induction Motors | 8. Adjustable-speed Drives |
| | 9. Gear Motors |

GENERAL



ELECTRIC



in WIRE ROPE, too
the RIGHT KIND of muscle
makes the difference

Endowed with highly specialized leg muscles, the kangaroo is able to make tremendous flying leaps—even with Junior perched in the rumble seat.

In wire rope, too, specialized jobs call for specialized muscles. That's why in Wickwire Rope we make sure you always get the proper combination of physical properties to best resist the destructive forces found on your particular job—whether it be abrasion, load strain, shock stress or bending fatigue.

Wickwire Rope gives you the benefit of long experience and specialized know-how which assures you of exactly the right kind of rope your particular job demands. For additional information write or phone our nearest sales office.



LOOK FOR
 THE YELLOW TRIANGLE
 ON THE REEL

THE COLORADO FUEL & IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
 THE CALIFORNIA WIRE CLOTH CORPORATION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
 WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia

WICKWIRE ROPE



PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
 THE COLORADO FUEL & IRON CORPORATION

BUSINESS IN MOTION

To our Colleagues in American Business...

For several years this space has been used to tell how Revere has collaborated with its customers, to mutual benefit. Now we want to talk about the way our customers can help us, again to mutual benefit. The subject is scrap. This is so important that a goodly number of Revere men, salesmen and others, have been assigned to urge customers to ship back to our mills the scrap generated from our mill products, such as sheet and strip, rod and bar, tube, plate, and so on. Probably few people realize it, but the copper and brass industry obtains about 30% of its metal requirements from scrap. In these days when copper is in such short supply, the importance of adequate supplies of scrap is greater than ever. We need scrap, our industry needs scrap, our country needs it promptly.

Scrap comes from many different sources, and in varying amounts. A company making screw-machine products may find that the finished parts weigh only about 50% as much as the original bar or rod. The turnings are valuable, and should be sold back to the mill. Firms who stamp parts out of strip have been materially helped in many cases by the Revere Technical Advisory Service, which delights in working out specifications as to dimensions in order to minimize the weight of trimmings; nevertheless, such manufacturing operations inevitably produce scrap. Revere needs it. Only by obtaining scrap can Revere, along with the other companies in the copper and brass business, do the utmost possible in filling orders. You see,



scrap very definitely helps us help you.

In seeking copper and brass scrap we cannot appeal to the general public, nor, for that matter, to the small businesses, important though they are, which have only a few hundred pounds or so to dispose of at a time. Scrap in small amounts is taken by dealers, who perform a valuable service in collecting and sorting it, and making it available in large quantities to the mills. Revere, which ships large tonnages of mill products to important manufacturers, seeks from them in return the scrap that is generated, which runs into big figures of segregated or classified scrap, ready to be melted down and processed so that more tons of finished mill products can be provided.

So Revere, in your own interest, urges you to give some extra thought to the matter of scrap. The more you can help us in this respect, the more we can help you.

When a Revere salesman calls and inquires about scrap, may we ask you to give him your cooperation? In fact, we would like to say that it would be in your own interest to give special thought at this time to all kinds of scrap. No matter what materials you buy, the chances are that some portions of them, whether trimmings or rejects, do not find their way into your finished products. Let's all see that everything that can be re-used or re-processed is turned back quickly into the appropriate channels and thus returned to our national sources of supply, for the protection of us all.

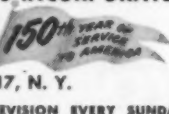
REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

Executive Offices:

230 Park Avenue, New York 17, N. Y.

SEE "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY



(Continued from page 158)

cinder blocks up to 4 times as fast as the conventional trowel method. Hand movements and mortar waste are reduced appreciably. Gates at base permit various thicknesses of mortar to flow evenly. A guide assures user of fast straight travel up to 6 blocks with one filling. Reasonably priced. Available from Kakest Company, Curwensville, Pa.

No. 127 - Use Coupon on Page 128

Low-Cost Lathes



Simmons Machine Tool Corporation, Albany 1, N. Y., is now building improved, low-cost high-precision No. 2 lathes, with 1 1/4" bar capacity. The lathes, which use standard assemblies and eliminate complex devices required only for rare operations, are designed for rapid production of precision parts and a variety of bar and chucking operations. They feature remote speed control, helical gears in the headstock, and an electrical tachometer that indicates spindle speed. Speed change, formerly selected by hand wheel, is now done by push button operation. Micro-Speed drive permits an infinite range of speed changes while the spindle is in operation in either direction.

No. 128 - Use Coupon on Page 128

Pre-Cut Masks Applied Without Moistening

Quik-Masks are handy self-adhesive, pre-cut masks and gaskets which are quickly applied without moistening to areas requiring protection. They eliminate cutting out masks by hand, expensive metal masks, etc., and provide low-cost protection in painting, cleaning, plating, tumbling, and many other production operations. They come pre-cut to the exact shape and size required, and are either mounted on cards, several masks to a card, or individually with each mask having its own folded liner on the adhesive side. Bulletin and samples available. Manufactured by W. H. Brady Co., Chippewa Falls, Wis.

No. 129 - Use Coupon on Page 128

(Please turn to page 166)

AIRCO stainless steel electrodes... a full range of standard types for vertical, overhead and horizontal positions



All Airco Stainless Steel Electrodes are designed to afford extreme operational ease in all positions — vertical, overhead and horizontal. Their arc stability and deposition characteristics assure smooth, flat weld deposits. Furthermore, Airco's continuing research permits you to get special stainless steel electrodes tailored to fit any unusual requirements that might arise.

These electrodes are supplied with two types of flux coatings — the heavy extruded lime type, specifically designed for application with DC reversed polarity, and the extruded titania type for AC or DC application.

These electrodes produce a spray type arc of excellent stability. The covering which serves as a flux gives rapid wetting action and com-

pletely covers the deposit. Because of this good wetting action, it is possible to produce welds which taper into the base metal, thus eliminating abrupt changes of contour which would be conducive to slag adherence.

For more information about Airco Stainless Steel Electrodes, write your name and address on the margin below, and send it to your nearest Airco office, or authorized dealer for a copy of Catalog ADC-650B.

More news about **AIRCO** products

IMPROVED AIRCO NO. 78E MILD STEEL ELECTRODE



No. 78E is an improved high quality E6010 electrode. It has a very smooth spray type arc with little spatter. The deposit solidifies quickly producing very smooth horizontal fillets. It also operates exceedingly well on vertical up, vertical down and overhead welding. The mechanical properties and X-ray characteristics are excellent exceeding the requirements of the E6010 class.

This electrode is used extensively in the welding of fittings on fired or unfired pressure vessels, storage tanks, structural frames, bridges, pipe lines, and all classes of marine work where high ductility and tensile strength are essential.

AIRCO HELIWELDING EQUIPMENT



All high capacity Heliweld holders are water-cooled to provide sufficient cooling for high currents used. There's the Air-Cooled Manual

Holder for light, general-purpose work . . . the Water-Cooled Manual Holder for heavier, general-purpose work . . . the Machine Holder for semi-automatic installations . . . the Automatic Head for the fully automatic operations. Also available is a Heliweld "Bumblebee" for AC heliwelding. This machine has all controls for current, gas and water within its housing, PLUS a one unit power supply.

For more information, write your nearest Airco office today for a free copy of Heliwelding Catalog No. 9.

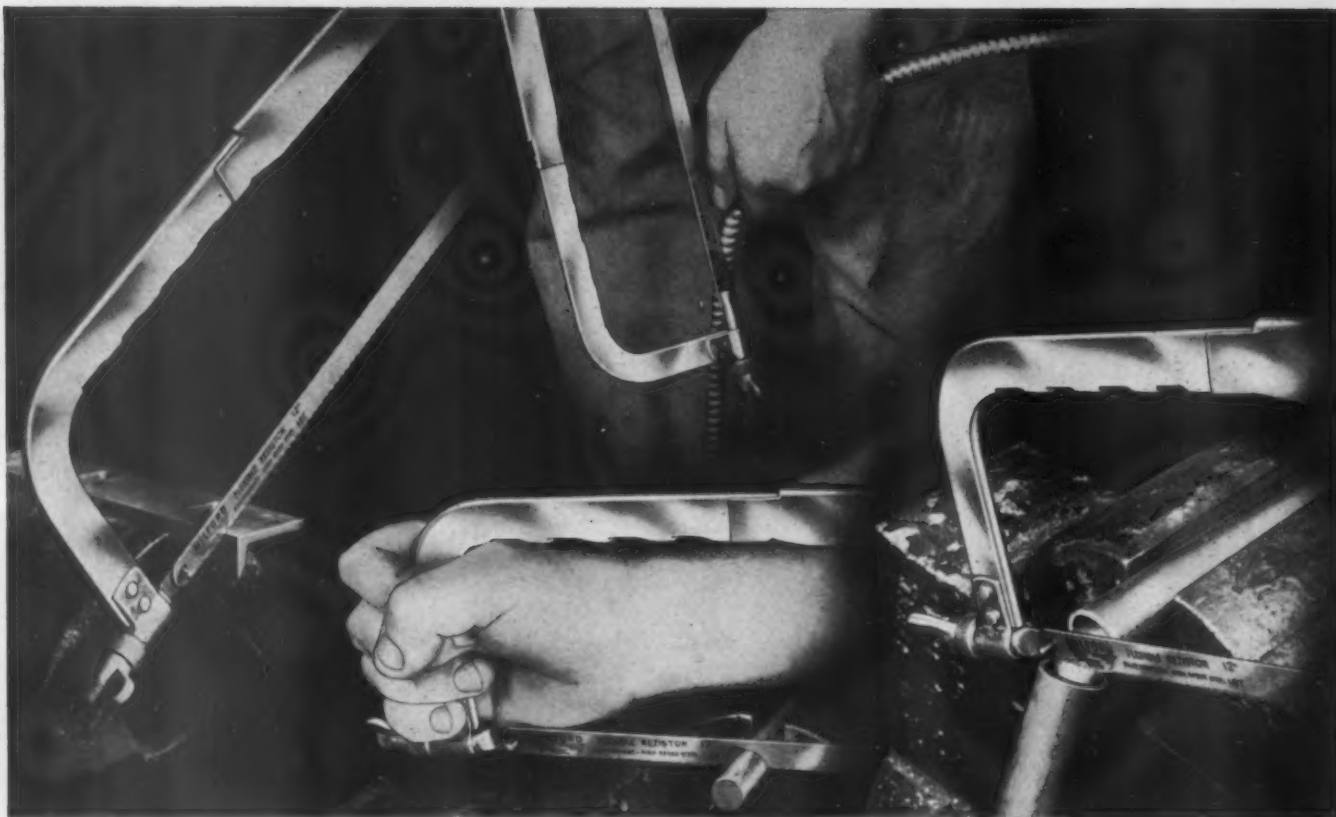
★ ★ ★

Air Reduction supplies Oxygen, Acetylene and other industrial gases . . . Calcium Carbide . . . and a complete line of gas cutting machines, gas welding apparatus and supplies, plus arc welders, electrodes and accessories. Ask us about anything pertaining to gas welding and cutting, and arc welding . . . we'll be glad to help you.



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Offices in Principal Cities



BUY MILFORD . . .

EXCLUSIVE EASY-STARTING TEETH A PRODUCT OF MILFORD EXPERIENCE

Applications like those shown above, normally difficult for ordinary blades, are easy for the Flexible REZISTOR with Easy-Starting Teeth. Exclusive MILFORD Easy-Starting Teeth — fine milled teeth found at the forward end of all MILFORD hand blades — bring you these distinct, performance-proved advantages:

- STARTS CUT AT ANY ANGLE
- TEETH WILL NOT CATCH ON RIDGES
- NO SCRAPING TO BEGIN CUT
- MATERIALLY REDUCES CUTTING TIME
- WILL NOT SLIP OFF CUTTING LINE
- WEAR DISTRIBUTED FULL LENGTH OF BLADE



MILFORD'S 75 years experience in metal cutting has made possible the superb MILFORD Flexible REZISTOR hack saw blade. Tooth to back, end to end, it is a product of experience. Its ability to take severe punishment — bending, twisting, cramping — without shattering, its virtual indestructibility are all proud results of MILFORD experience.

THE HENRY G. THOMPSON & SON CO., NEW HAVEN, CONNECTICUT

SAW BLADE MAKERS

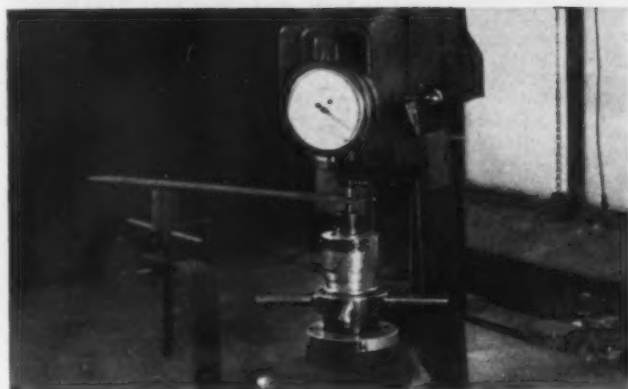


FOR 75 YEARS

1876-1951



EXPERIENCED MILFORD test engineers, always probing for hidden areas of weakness, devised special tests for the Flexible REZISTOR like the one shown left. By subjecting test blades to countless unnatural stresses and strains — bending, twisting, cramping — and evaluating the results, they were able to contribute substantially to the development of this fine tool. Such experience, gained through long association with metal cutting, stands back of any MILFORD blade — guarantees you peak performance with every MILFORD blade.



EXPERIENCE taught MILFORD that a blade with the performance characteristics of the Flexible REZISTOR would require a very special saw stock. MILFORD metallurgists, calling upon their years in the industry, were able to come up with a special analysis steel perfect for toughness and flexibility, and perfect for hardening only at the teeth.

BUY EXPERIENCE



EXPERIENCED MILFORD product engineers knew that a blade with the Flexible REZISTOR'S characteristics would require a special type of heat treatment — a treatment which would produce teeth as hard as a power hack saw's leaving the flexibility and toughness of the back completely intact. Long association with metals and metal cutting enabled them to design and build the furnaces shown at left.



MILFORD METAL CUTTING MEMOS . . . MILFORD has prepared this interesting, informative literature for you. Containing much useful information on metal cutting — the latest in MILFORD product information too — it is part of MILFORD'S consistent effort to help you get the maximum in long, efficient performance from your MILFORD blades. Your local MILFORD distributor has a supply on hand. See him today, or, write direct to the factory.



**METAL CUTTING SAW BLADES
REZISTOR & DUPLEX HACK SAW BLADES
PROFILE & BAND SAW BLADES**

IT'S A

Mac-it
PRONOUNCED
"MACK-IT"

Mac-it Hollow Pipe Plugs
— for accuracy, safety,
uniformity and strength.



BUILT FOR STRENGTH!

For the toughest kind of fastening jobs, the complete Mac-it line of heat-treated, alloy steel screws will give you the strength you need *where you need it!*

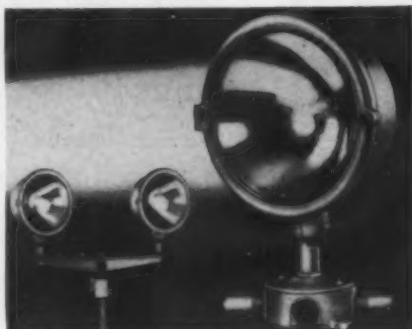
Mac-it's 38 years' experience in the manufacture of these top-quality fasteners is your assurance of precision, uniformity and strength. Sold through leading industrial distributors from coast to coast and in Canada.

Other Mac-it products include:

- Socket Head Cap Screws
- Hollow Set Screws
- Stripper Bolts
- Hollow Lock Screws
- Socket Screw Keys
- Square Head Set Screws
- Hexagon Head Cap Screws
- ... and many others

Marketed Nationally Since 1912 by
STRONG, CARLISLE & HAMMOND COMPANY
Cleveland 13, Ohio

High Intensity Spotlight



Protection of industrial property, both for economic and security reasons, is more important than ever. Vulnerable spots can be well lighted with a new outdoor spotlight made by Stonco Electric Products Co., 489 Henry St., Elizabeth, N. J. It is a 100,000 candlepower unit with only a 300-watt rating. Universally adjustable cast-aluminum swivel arm fits a variety of standard interchangeable accessories, such as flat base, wall brackets, etc. Up to 5 units can be mounted to a single cluster light assembly. All lights in a cluster would have to go out before total darkness was possible.

No. 130 — Use Coupon on Page 128

Portable Heat-Sealer Easily Operated



A full-scale portable heat sealer with two 13" jaws can be handled easily under difficult conditions, according to Globe Products-Heat Seal Corp., 3380 Robertson Blvd., Los Angeles, Calif. By using compressed air the Aero Seal-It applies a strong permanent seal to heavy laminated barrier wrapping materials used on such large objects as aircraft engines, electronic equipment, etc. It can also be used interchangeably for the regular heat sealing of cellophane, pliofilm, polyethylene, etc. For conditions where the operator must carry the machine upraised for long periods of time, there is available a safety counterbalance unit that nullifies the machine's weight.

No. 131 — Use Coupon on Page 128
(Please turn to page 168)



"REJECTS CAN BE MINIMIZED WITH THE RIGHT CUTTING FLUID"

THERE is always one right cutting fluid for every machining job—one that will do the job better or faster, or both. Take Rudolph's problem of rejects. Here is what one company did about it.

THE OPERATION. Grinding the bearing surface and shoulder on engine camshafts of RC60 hardness.

MACHINES AND WHEELS. Camshaft Grinders with 80 grit wheels.

STOCK REMOVAL. Remove .036" on bearing surface and .012" to .020" on side of shoulder.

PREVIOUS RESULTS. Wheel face dressed after 8 pieces, wheel sides after 3 pieces. Scrap loss 18%.

WITH STUART GRINDING OIL. Wheels dressed on face and sides after 18 pieces. No scrap loss.

You can secure benefits like this. Ask to have a Stuart Representative call.

Are you receiving Stuart's Shop Notebook regularly?



Visit the Stuart Booth No. A-266 at the Metal Show Detroit Oct. 15-19

D.A. Stuart Oil CO.

2727-31 S. Troy Street, Chicago 23, Illinois

What's unusual about U. S. Rubber's new plastic coating?

For one thing, this new coating, called *U.S. Royalguard Protective Coating*, has very high film flexibility and adhesion. It protects:

Against attack by splash, drip, and spray from corrosive chemicals:

- Chemical Processing Equipment
- Tanks
- Tank Cars
- Pipes
- Fittings

Against weathering and rust:

- Structural Steel Parts
- Machinery



U.S. ROYALGUARD plastic coating being applied to yarn-carrying wheels used by textile industry. It is air-drying...no baking or other special treatment is required to produce a tough, flexible, highly corrosion-resistant film.

Royalguard is a one-coat system...no primer is required. It will find its broadest use in chemical processing, rayon and cellophane production, photo finishing, pulp and paper manufacturing, sewage disposal, filtering, electroplating and in mining. Write to address below.

SAMPLE PLATE coated with Royalguard is bent in vice to demonstrate its high film flexibility and high adhesion. It can be used on steel, aluminum, concrete, hardwood or composition board.

PRODUCT OF

U.S. RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

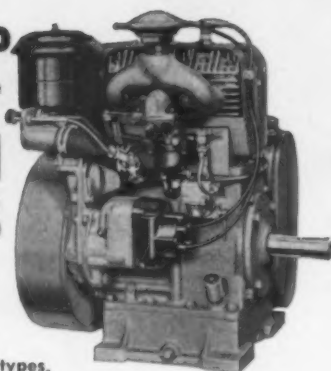
MECHANICAL GOODS DIVISION, ROCKEFELLER CENTER, NEW YORK 20, N. Y.

OCTOBER, 1951

Please mention *PURCHASING Magazine* when writing to advertisers.

167

POWER ADVANTAGE in the 7 to 13 hp. Range...The 2-Cylinder **WISCONSIN** *Air-Cooled* **ENGINES**



Here is the POWER ADVANTAGE story of the 2-cylinder Wisconsin Heavy-Duty Air-Cooled Engines, the development of which fills the need for a power linkage between the single-cylinder and four-cylinder types.

1. Dependable air-cooling under all climatic and weather conditions.
2. Self-cleaning tapered roller bearings at both ends of the crankshaft to withstand either side-pull or end-thrust without danger to bearings.
3. Rotary type high tension OUTSIDE Magneto with Impulse Coupling operates as an entirely independent unit that can be serviced or replaced in a few minutes.
4. Maximum torque at usable speeds for equipment that really has to go to work.

CONDENSED SPECIFICATIONS

MODELS		TE	TF
Bore	inches	3	3 1/4
Stroke	inches	3 1/4	3 1/4
Piston Disp. cubic inches		45.9	53.9
Horsepower			
1400 rpm		7.2	8.6
2000 rpm		10	12
2600 rpm		11.2	13.3
Net weight in lbs., Standard engine, side-mount tank		220	220

Our engineering department will gladly cooperate with you in adapting Wisconsin Engines to your requirements. Write for detailed data and name of the nearest Wisconsin distributor.

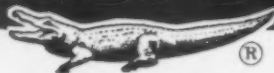


WISCONSIN MOTOR CORPORATION

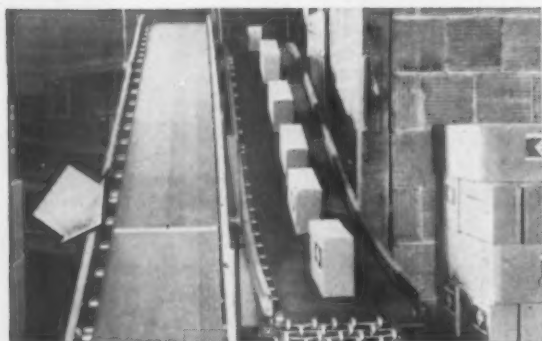
World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

ALLIGATOR



CONVEYOR BELT LACING



Every Tooth A Vise

in Long Continuous Lengths for Conveyor Belts . . .

- ★ Excellent for Package Conveyors, Portable Loaders, Trenching and Ditching Machines, etc.
- ★ In canneries where corrosion or rust is a problem specify Alligator made of Monel.
- ★ For magnetic separators or anti-sparking specify Alligator made of Everdur.
- ★ Separable and smooth on both sides.
- ★ 12 sizes. For belts from 1/16" to 5/8" thick—and any width.

Order from Your Supply House. Ask for Bulletin A-60

FLEXIBLE STEEL LACING CO., 4697 Lexington St., Chicago 44, Ill.

JUST A HAMMER TO APPLY IT

2-lb. Air Hammer Does Medium-Heavy Duty Work



Model G-200 air hammer made by Salsbury Corporation, 1161 E. Florence Ave., Los Angeles 1, Calif., is a light hand tool, but will perform medium-heavy duty work in general shop and maintenance operation. Weighing only a little more than 2 lbs., it strikes up to 6000 blows per minute with maximum force, working at 120 psi. It may be metered to any lower speed or striking power by means of a simple finger trigger action. A safety feature is the 3-point ball-bearing chuck which locks tools in working position and eliminates hazards of tool ejection. Driving piston is the only moving part.

No. 132 — Use Coupon on Page 128

Also Noted . . .

Specially designed, precision-made nails for various specialty industries are available from The Roberts Co., 1536 N. Indiana St., Los Angeles, Calif. Specifications range from 22 to 10 gage, with lengths from 1/4" to 2 1/2". Head sizes depend on gage and type of wire used. Head shapes are round, oval, conical, flat or countersunk.

No. 133 — Use Coupon on Page 128

Moderately priced compounds for emergency surface hardening of small tools or parts with an ordinary torch are called Instant Hardeners Nos. 1 and 2. No. 2 has small hard facing particles mixed in the compound, which fuse with the parent metal to give a combination of hardening and hard overlay. Made by Eutectic Welding Alloys Corp., 40-40 172nd Street, Flushing, N.Y.

No. 134 — Use Coupon on Page 128

Lake Chemical Co., 3052 W. Carroll Ave., Chicago, Ill., has brought out Krak-Stik, a versatile pipe mending cement that forms a positive seal for water, gas, acids and brine. It can be applied to pipes while water is flowing through the crack. No heating of pipe or stick is necessary.

No. 135 — Use Coupon on Page 128

(Please turn to page 170)



How do you measure a good buy?

TOP P.A.s use four measures of value in buying component parts. Price is one. But more important, they measure the *quality* of the part, the manufacturer's *services* that go with it, and its *public acceptance*.

By taking these three features into account, you get a far more accurate measure of the real value of a part than you can with price alone. This simple formula shows why:

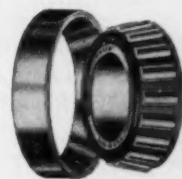
$$\text{Value} = \frac{\text{quality} + \text{service} + \text{public acceptance}}{\text{price}}$$

Obviously, a big advantage above the line outweighs a small one below the line.

In tapered roller bearings, the name "Timken"

means value. That's because Timken® bearings assure you of the highest quality, the most extensive service support and the widest public acceptance (see P.A. Notes). The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario, Cable address: "TIMROSCO".

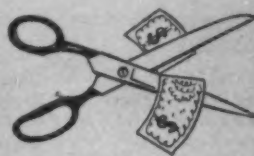
TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



P. A. NOTES:



3-MAN TEAM. Timken bearings are backed by an unequalled service team of (1) sales engineers, (2) home-office specialists and (3) service department men. They'll help your engineers on problems of design, mounting, assembly and lubrication, as well as selection of bearings.



CUTS COSTS. Improvements in bearing precision made by the Timken Company have steadily increased Timken bearing capacity. Today, you can use smaller bearings and reduce costs.

SUPER SALESMAN. Timken bearings in your product help it sell. Throughout industry, they are first choice for original equipment.



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THERE IS AN ARROW-HART MOTOR STARTER JUST RIGHT FOR THE JOB . . . IN A COMPLETE RANGE OF SIZES.

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THE ARROW-HART & HEGEMAN ELECTRIC CO.
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New development of the Hanson-Van-Winkle-Munning Co., Maturan, N. J., is the Mercil portable type **plating apparatus** with Plexiglas cylinder. The lightweight, easily handled equipment has cylinders 6" in diameter x 12" long and 8" in diameter x 18" long, enabling the user to process small parts efficiently.

No. 136—Use Coupon on Page 128

An air-powered screw driver and nut setter, Model 7500, has a push-button control which provides instantaneous reverse action. In changing from forward to reverse the tool need not be removed from the work and no time is required for adjustment. The operator always has one hand free. Made by Aro Equipment Corp., Bryant, O.

No. 137—Use Coupon on Page 128

Lucoflex, a non-plasticized polyvinyl chloride that does not age, is resistant to almost all acids, alkalis and many special chemical solutions, is now being fabricated by Van Dorn Iron Works, 2685 E. 79th St., Cleveland, O. It is made into rigid sheets, tubes, bar stock and molding powder, and is capable of being welded, machined and formed.

No. 138—Use Coupon on Page 128

The DuBois Company, Cincinnati 3, O., has introduced Super-Mul, a high strength, active solvent **emulsion cleaner** for the removal of soils in spray washing machines. DuBois says it cleans thoroughly, rinses freely, resists hard water, and does not sludge out even with heavy soil loads.

No. 139—Use Coupon on Page 128

Laurens Bros., Inc., 2780 Highland Ave., Cincinnati, O., is handling Weipert lathes, well-known in Europe, but never before imported into United States. Basically 18" lathes, raised to swing to 22", they have been adapted for American use by being fitted with precision Timken bearings on the spindle and with American standard taper key drive spindle nose.

No. 140—Use Coupon on Page 128

Phosphorescent plastic signs that glow in the dark are available from Norco Products Manufacturing Co., 392 Bleeker St., New York, N. Y. The signs retain an afterglow from 8 to 12 hours, are visible from 15-20 feet, and cannot be seen from the air. Available with adhesive backs or with grommets. From stock or on special order.

No. 141—Use Coupon on Page 128

West Disinfecting Company's new **All-Purpose Cleaner**, combines the advantages of an all vegetable

(Please turn to page 174)

Gummed Tape

FIRST CHOICE AMONG CLOSURES



only GUMMED TAPE
makes a carton so
EASY TO OPEN AND RE-USE

Even though *gummed tape* grips like a bulldog, a sharp blade is *all* your customer needs to open the cartons. He doesn't risk injury to his hands or his newly-acquired merchandise. And, a vital advantage today, the carton is unharmed—ready for re-use.

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You win friends by using gummed tape to provide better protection, easier opening and longer service from cartons.

Orange Core makes your shipping dollars go further



ORANGE CORE

IS A BETTER TAPE
 BECAUSE IT'S...

*Supple-ized**

Your shipping room employees work faster with Orange Core because it's *Supple-ized*. This exclusive process makes Orange Core more flexible, easier to use, faster to apply. For proof, try it and see why Orange Core is...

"The world's largest selling gummed tape"



Available plain or printed,
 in choice of widths,
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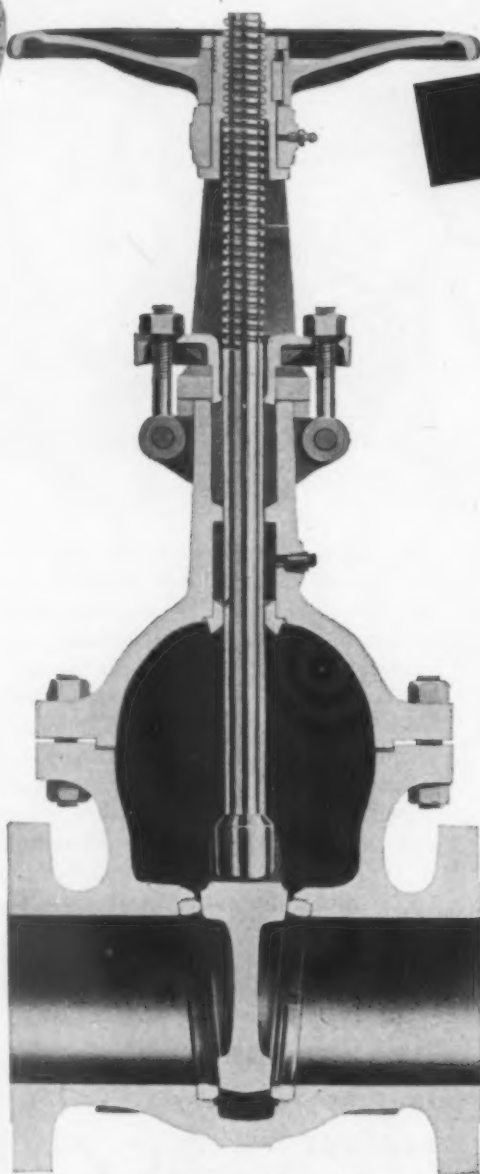
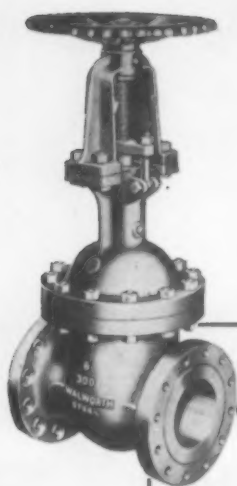
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Series 150 and 300

Wedge Gate — Outside Screw and Yoke



Sectional view of Series 300

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Deep Stuffing Boxes in all sizes (2" to 24") insure tightness and maximum packing life — costly leaks are eliminated.

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Streamlined Ports allow high velocity, non-turbulent flow, and reduce the possibility of erosion.

Valves regularly have flanged ends. They can be supplied with ends for butt welding. Roller bearing yokes are available. On valves 5 inches and larger, by-passes can be furnished.

For Series 600 and higher, we recommend Walworth Pressure-Seal Steel Gate Valves.

For further information on Walworth Cast Steel Gate Valves, see your local Walworth distributor, or write:

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valves and fittings

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The tough special analysis steel head, the result of years of research and engineering, withstands years of heavy pounding.

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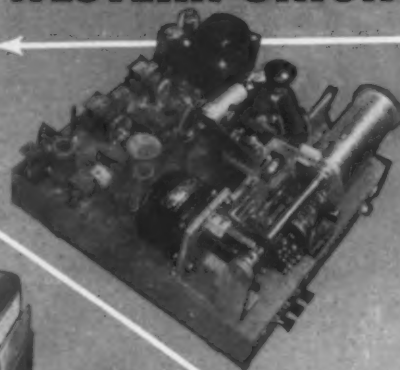
The black head with the red handle—exclusively PLUMB

TESTED PLUMB HICKORY
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SHADED POLE, 1/2000 TO 1/15 H.P.

INDUCTION TYPES, 1/1400 TO 1/5 H.P.

Utilizing CYCLOHM precision Induction motors in the miniature facsimile machines, called the Desk-Fax, Western Union has brought high speed telegraph service to many Government Agencies and Defense Plants.

With a Desk-Fax Machine, only 10"x11"x7" in size, messages can be transmitted and received immediately from desk or office.

Model 2500 Cyclohm Synchronous Induction Motors are used as the drive mechanisms for the message drum. Because perfect operation is absolutely essential, Cyclohm motors were chosen from exhaustive tests of many motors.

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HOWARD

DEPT. P-MS • HOWARD INDUSTRIES, INC. • RACINE, WISCONSIN
DIVISIONS: EMC ELECTRIC MOTOR CORP. CYCLOHM MOTOR CORP.

(Continued from page 170)

oil soap with those of a synthetic detergent and an alkaline polyphosphate water softener. It can be used for scrubbing, mopping and washing all types of floors, windows, etc. West is at 42-16 West St., Long Island City, N. Y.

No. 142 — Use Coupon on Page 128

Scru-Tite anchors, extruded of tough Tenite plastic, secure nails or screws in practically any solid material such as brick, plaster, or cinder blocks. Insertion of screw or nail makes plastic cold-flow into crevices of previously drilled hole. Made by Mastercraft Plastics Co., 95-32 150th St., Jamaica, N. Y.

No. 143 — Use Coupon on Page 128

A new safety rope for linemen, maintenance men and other workers who face electrical hazards "fights off water" and is said to possess remarkable non-conductivity factors. This shock-resistant rope, called Se-Lectric, is a product of South-Eastern Cordage, 635 N.B.C. Building, Cleveland, O.

No. 144 — Use Coupon on Page 128

A transparent, colorless, silicone-base masonry seal with superior water repellent qualities, is a product of Surface Protection Co., 16803-P, Cleveland 12, O. Called Silaseal, it contains no wax or oils, provides an invisible coating of masonry pores, penetrating to depths of up to 3/8".

No. 145 — Use Coupon on Page 128

American Abrasive Metals Co., 460 Coit St., Irvington, N. J., offers Fera-Mat, a non-slip floor covering with walking surface composed of durable mineral granules resin bonded to heavy duty weatherproof cloth backing. Available in cleats 6" x 24", or in rolls 6" wide, 96' long.

No. 146 — Use Coupon on Page 128

Since heat is harmful to the "life" of bleached shellac, a new cold process product for bleaching is said to improve the color, toughness, body, cutting time, solubility and stability. Called Cold-Pro, it is made by Acme Shellac Products Co., 126 Blanchard St., Newark, N. J.

No. 147 — Use Coupon on Page 128

Additional

New Products

Check coupon on page 310



How we use pull . . .

to help your wire do a better job!

● It doesn't pay to take things for granted. That's why extensive wire research goes on *all* the time at National-Standard — behind-the-scenes work that time and again helps our customers speed operations, save material, improve their products and cut costs.

The lab test being rigged above, for example, will reveal the rubber adhesion qualities of a newly de-

veloped wire finish. After the rubber layers are vulcanized, carefully recorded pull will be exerted on the imbedded wire until it finally breaks loose. Only by such painstaking test work can you be assured of new, improved qualities and characteristics that will let you make the *most* of wire.

Whatever use you make of wire—in rubber products, or anything from bottle caps to zither strings—keep in mind that National-Standard's facilities, experience and "groundwork" are always ready to help you put wire to work with the *greatest* efficiency at the *lowest* cost.



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REYNOLDS WIRE..Dixon, Illinois.....	Industrial Wire Cloth
WAGNER LITHO MACHINERY..Jersey City, N. J.....	Lithographing and Special Machinery
WORCESTER WIRE WORKS..Worcester, Mass.....	Round and Shaped Steel Wire, Small Sizes



Hex Nut



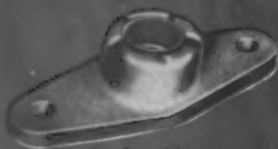
Spline Nut



Clinch Nut



High Tensile Nut



Anchor Nut



Floating Basket Nut



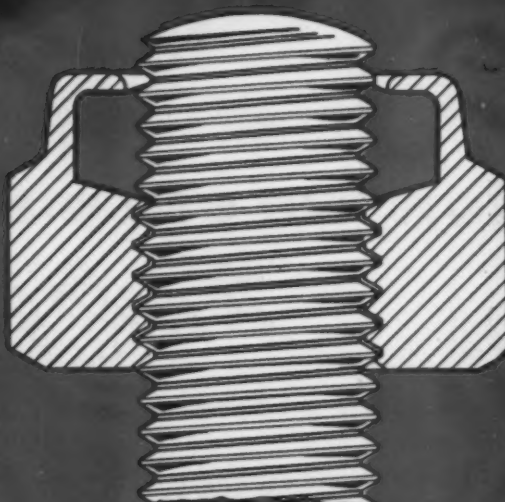
The Famous Red Elastic Collar

NYLON OR FIBER

Identifies self-locking Elastic Stop Nuts. With the regular fiber locking insert they meet AN-N-5 re-useability requirements. With the new nylon locking insert they surpass these specifications — provide more than 200 re-use cycles.

HOLDS FIRM

... against vibration. The Red Elastic Collar—an integral part of the nut—grips bolt threads, because its inside diameter is smaller than bolt diameter. Permits accurate bolt loading — maintains accurate adjustments.



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FOR ARMY AND NAVY AIRCRAFT, ORDNANCE AND
SIGNAL CORPS EQUIPMENT

Free AN-ESNA Conversion Chart

Elastic Stop Nut Corporation of America
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Union, New Jersey

Please send me, free, bulletin detailing the ESNA fastener line
and a useful copy of the AN-ESNA Conversion Chart

Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____

ES/nail



ELASTIC STOP NUTS

PURCHASING

OCTOBER, 1951

OFFICE EQUIPMENT and SUPPLIES



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— When Writing to Manufacturers Direct, Please Mention **PURCHASING** Magazine. —

Filing Methods and Supplies

33. DO you need Guide Sets, Table Guides, Binders and Blanks, Card Guides, Daily Guide sets, Envelopes, Expansion Folders and Expanding Files, Folder Fasteners, File Jackets, Files, Filing System sets, Folders? These and a host of other filing items are illustrated and described in New 60 page catalog No. 151 just released by the Sell Corporation. Copy is yours for the asking.

Inter-Office Communication

34. PRINTED matter tells about the Modernphon automatic push-button telephone system for inter-office communication. To call a person you merely lift the handset and press the button over his name. There can be as many private conversations over the system at the

same time as there are pairs of instruments. There can be conferences, even several separate ones, going on at the same time. Intercom systems in standard sizes range from five to 50 lines. Modern Telephone Corp.

Saves Time and Money Punched Card System

35. THE Flexisort System provides a rapid and inexpensive means for sorting record cards into any sequence or classification desired. Pre-punched forms are unnecessary—you may use your own forms. The Flexisort machine simultaneously punches both holes and notches where needed. Any kind, size or thickness of card stock, and paper as light as 38 lb. may be used. Automatic coding prevents errors. Printed matter available. Superior Business Machines, Inc.

New Calculator Features Speedy, Easy Operation

36. NEW fully automatic calculator provides speed in obtaining answers and an unusual ease of operation. Instantaneous completely automatic multiplication, completely automatic dual division, and single cycle addition and subtraction are features of the machine. Machine is characterized as being ideal for payroll calculations, invoicing, inventories, taxes, expense pro-rations, and all work requiring individual extensions with grand totals. Illustrated literature is available from Friden Calculating Machine Co., Inc.

Electronic Dictating Machine

37. PRINTED matter describes the Gray Audograph electronic sound-writer for executives, secretaries, salesmen and others. Being only 9½" square and weighing only 16 pounds it is conveniently portable. Dictating is on Flexograph discs which are available in units of 20, 30 and 62 minutes capacity. The discs are paper thin, flexible and virtually unbreakable, and can be mailed at ordinary letter rate. Filing and mailing envelopes are available. The Audograph can also be used for telephone recording, conference recording, speeches and interviews. The literature describes the merits of the system for executive, general office, and sales work, etc. The Gray Manufacturing Co.

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MORRISET—the constant-flowing, all-round writing implement that holds a full 2½ ounces of ink for months of writing without refill. Absolutely will not flood. Choice of five quickly replaceable "thread-in" points — extra fine, fine, medium, broad, stub.

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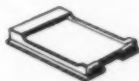
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FOUNTAIN PENS — an efficient and economical pen set with "thread-in" point section. A real time and money saver in any office.



BOOK ENDS — at last — inexpensive book ends to match modern office furniture.



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LETTER TRAY — strong two point suspension allows access from entire front and both sides. Tiers quickly added, legal or letter size



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Shirts, Snacks, Smoking and Hours Office



Office dress customs, the employment of married people, snack practices and office hours are some of the topics covered in the 2nd Office Customs Survey published by the National Office Management Association, Philadelphia, Pa. Additional topics taken up in the survey are length of work week, rest facilities and rest periods, length of lunch periods, office smoking and the use of cuspidors.

The survey results are classified according to type of business, size of company and geographic area. Over 2,100 companies in more than 120 cities in the United States, Canada and other countries participated in the survey; 464,649 office employees are represented.

Less than 4% of the responding companies concern themselves officially with the dress of their office employees. With the advent of warm weather, girls have for years been able to dress quite comfortably, but men employees have often suffered from an overload of clothing in the past. The results of NOMA's survey show that this situation is fast becoming obsolete; over three-quarters of the responding companies allow men employees to remove their coats at any time, and an additional 13% allow their men to remove their coats in warm weather only; over 58% allow sports shirts. A further indication of leniency is that in the companies allowing men to remove their coats, 82% allow them to be removed while contacting customers or the public. Only 2% of the responding companies said they did not allow

men employees to remove their coats at all.

Forty-two percent of the reporting companies restrict the smoking of women employees while at their desks. It is interesting to note that women are restricted in their smoking by about the same number of companies as allow men unrestricted smoking. Less than 3% of the reporting companies forbid smoking entirely.

Between meal feeding is of major importance to many companies. This is especially true of the morning "coffee hour." Almost 85% of the responses indicated that between meal snacks were officially okayed. To add to this overwhelming acceptance, over half of the companies that did not officially allow between meal snacks said that they "ignored violations" of the rule.

The standard office work week in hours is shrinking, the survey indicates. Almost twice as large a percentage of companies show a work week of under 37 hours as did in a similar survey in 1946. The group working from 37 to 39 hours per week has grown by over 25%, while the companies working over 39 hours has become smaller. There is a 25% reduction in the companies working 40 hours.

The most popular starting time is between 8:00 and 8:29 a.m. Fifty-six percent of the companies responding to the survey begin the work day at this time. Thirty-one percent between 8:30 and 8:59 a.m. Companies setting their starting time for 9:00 a.m. and later equal only 15% of the number that favor

8:00 to 8:29. Fewer than 100 companies indicated that they started work before 8:00 a.m.

Over half of the responding companies stop work in the office between 5:00 and 5:29 p.m. The next favored quitting time is between 4:30 and 4:59 p.m., with 31% answering here. Just over 100 of the 2,100 companies indicated that they quit before 4:30; 123 companies quit after 5:29.

When asked what policy is followed when the husband or wife of a present employee applies for a position, the responding companies were about evenly divided; half said they would reject the application and the other half said they would ignore the family relationship and consider it as they would any other. When two employees marry, 35% of the companies would move them to separate departments, and 14% of the companies consider it necessary to dismiss the wife or husband.

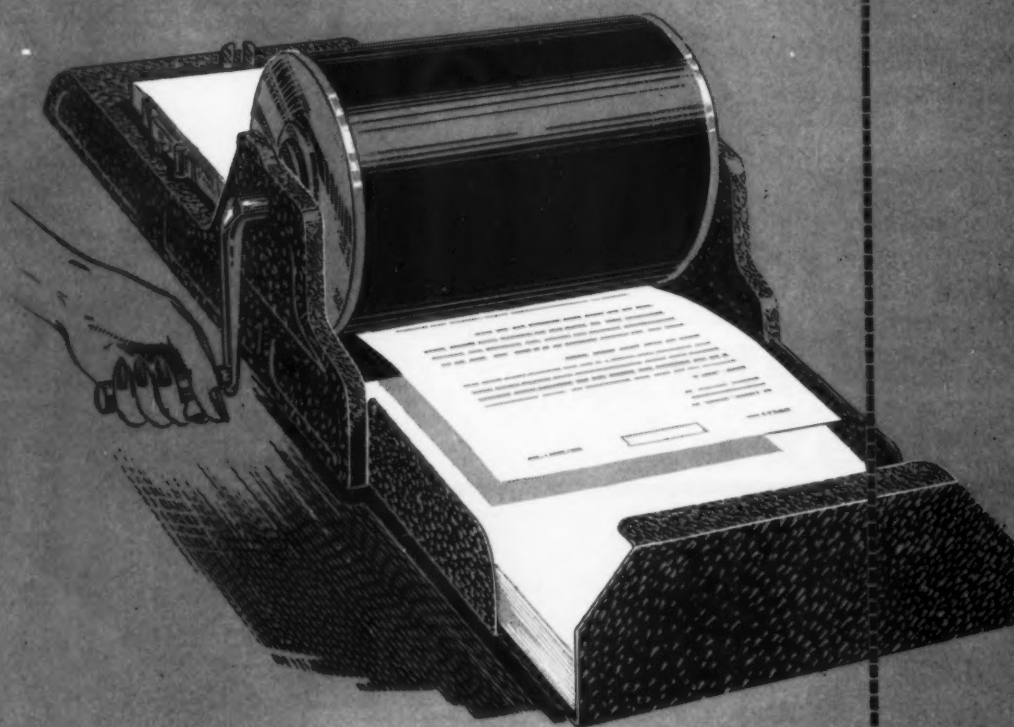
Married women aren't finding their sex a barrier to employment in the present day office. Ninety-three percent of the responding companies indicated that they do hire married women.

Replies to the final question in the survey bore out the suspicions held by the Association that cuspidors have not entirely faded from the office scene. One-fifth, or 20%, of the offices still have cuspidors in use. Only 1% of these companies provide a cuspidor at every desk, but 18% provide them if requested.

The survey was made by NOMA's Technical Division and

(Please turn to page 186)

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Please ☐ acknowledge receipt of
☐ advise best delivery for
☐ confirm delivery requested

order No.	date of order	will ship	remarks

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Willcox & Gibbs Sew. Mach. Co.
Nyack, N. Y.

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Purchase Order

Standard Follow Up Order, RR No. 50932 is used for open purchase order files, principally for fast turnover items such as expendable tools, operating supplies, etc. One folder is used per purchase order.

Use of folder reduces filing time, eliminates use of clips and staples, and simplifies expediting.



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DELIVER TO _____ DELIVERY SPECIFIED _____

SHIP VIA _____

TERMS _____ REQUIRED BY _____

IMPORTANT
Show ORDER NUMBER PLAINLY MARKED on the outside of all packages and on packing slip and invoice.
SEND SEPARATE INVOICE FOR EACH ORDER IN DUPLICATE.
Mail Express Receipt or R/I immediately after each shipment.
If your Terms are other than stated on this order advise us.
This order must be acknowledged with shipping date.
All over shipments are made on your own responsibility. We reserve the right to reject and return at your expense all material in excess of the quantity ordered.

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NYACK FACTORY

By _____

DATE	QUANTITY	AMOUNT OF INVOICE	PARTIAL SHIPMENT	ORDER COMPLETED

FORM 630 DUPLICATE

Left: Record form on Purchasing Department copy of purchase order.

(Please turn to page 184)

it adds...

subtracts...

multiplies...

divides...

and keeps
a Record, too!

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Sundstrand

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**TO PATCH
A PAGE!**



TEXCEL Cellophane Tape speeds up a dozen desk jobs. Sealing, hinging, holding, repairing and fastening tasks are made easier with **TEXCEL**. Keep it handy.

**TO STOP A
POP**



Nothing steps up office wrapping and mailing chores as fast as **TEXCEL** Cellophane Tape. For bigger jobs use long lengths and dispenser.

**TO POST
A
POSTER!**



TEXCEL takes over countless bottle-neck, time-consuming chores. Stock **TEXCEL** Cellophane Tape today!

TEXCEL

CELLOPHANE TAPE



INDUSTRIAL TAPE CORPORATION
NEW BRUNSWICK, NEW JERSEY
Also makers of a complete line of pressure-sensitive
tapes for industry.



CORBIN

Wood Products

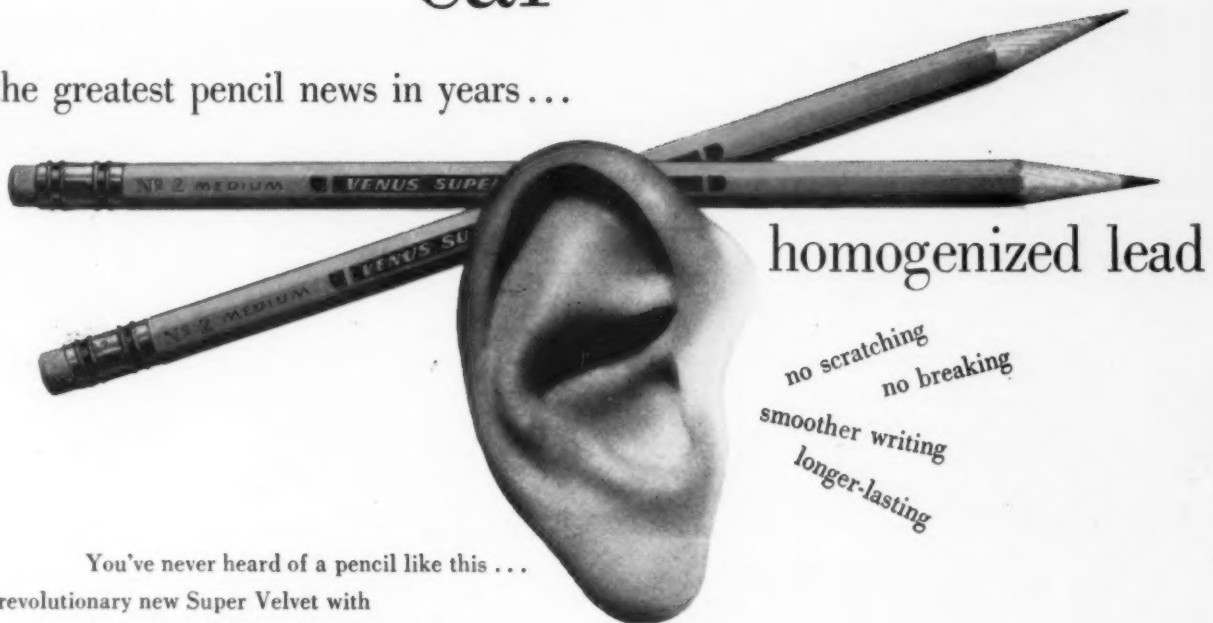
DINING TABLES, WARD ROBBERIES, STORAGE CABINETS,
BED CABINETS, BULLETIN BOARDS AND SPECIAL PRIZES

[illegible][illegible]

PURCHASING

lend an ear

to the greatest pencil news in years...



homogenized lead

no scratching
no breaking
smoother writing
longer-lasting

You've never heard of a pencil like this... the revolutionary new Super Velvet with *homogenized* lead. The clay and graphite are chemically exploded by a patented colloidal process into millions of tiny particles and then fused into a perfect lead, uniformly smooth-textured over its entire length!

And because it's *pressure-proofed*, too... an exclusive process that permanently clamps wood-to-lead... Super Velvet never snaps or breaks... gives you a stronger, longer-lasting, more economical pencil. (It writes 39,000 words!) Try the new Super Velvet... it's the finest smoothest writing pencil anywhere!

VENUS
super velvet



Buy them by the dozen... buy them by the gross... for every kind of office use. See your commercial stationer.



Venus Velvet... only 6¢... for the money still the finest pencil you can buy. Get a good supply for office.

American Pencil Company, Hoboken, N. J. makers of famous Venus pencils and Venus pens

Now! Custom-built comfort at
mass-production prices



for
men



Model 17-T
General Office
Chair, about
\$43.95



Model 17-A
Jr. Executive
Chair, about
\$48.45

6 EASY ADJUSTMENTS

... no other office chair has them all!

1. Seat adjustable in height by means of Cosco's exclusive "Finger-Lift" mechanism, which *positively* locks seat at any desired height between 16 $\frac{3}{4}$ " and 20 $\frac{1}{2}$ ".
2. Seat adjustable in depth by sliding back in or out.
3. Front of seat may be raised as much as 1 $\frac{1}{2}$ " from parallel position to obtain desired slope of seat.
4. Backrest, which has two-way curvature for maximum comfort, may be moved up or down 1 $\frac{1}{2}$ " to provide back support where desired.
5. Backrest adjustable in or out for pitch, within 1 $\frac{1}{2}$ " range.
6. Tension of spring-action tilting seat and back adjustable with turn of handwheel beneath seat.



Model 16-F
Secretarial Chair
with fixed back,
about \$29.95

for
women



Model 16-S
Secretarial Chair
with spring-tension
back, about \$31.95

5 FULL POSTURE ADJUSTMENTS

... all easily made without tools!

1. Seat adjustable in height by means of Cosco's exclusive "Finger-Lift" mechanism, which *positively* locks seat at any desired height between 16" and 20".
2. Seat adjustable in depth by sliding back in or out.
3. Padded, contour backrest may be raised or lowered to provide support wherever desired to assure maximum comfort.
4. Backrest tilts freely to "follow" each movement of the occupant's back.
5. Tension of spring-action back adjustable by hand-wheel beneath seat.

COSCO Office Chairs



Model 20-L
"Form-Fit" Side Chair,
about \$23.95

for
visitors

Model 20-A
"Form-Fit" Side Chair,
about \$29.95

Featuring four "Finger-Lift" models easily adjustable to the user's own physique . . . his own work habits . . . his own ideas of comfort

That's the keynote of this complete, new line of Cosco Office Chairs . . . comfort, quality and styling such as you never knew existed . . . yet at prices which only Cosco's mass-production facilities could make possible.

Featured in this Cosco line are four models with the exclusive, positive-locking "Finger-Lift" height-adjusting mechanism . . . and up to six easy adjustments in all which permit the individual to "fit" these chairs to his own physique, his own work habits, and his own ideas of comfort.

All six models in the line—which also includes two "Form-Fit" side chairs for general office use, have certain similarities of design, construction and finish to give your offices "decorative symmetry" in addition to providing the most efficient and most comfortable seating for every employee and business visitor.

Frame and base, or leg, construction is of sturdy, tubular steel, with finish of gray, brown, or green baked-on enamel. Series 16 and 17 chairs have large, 2", soft-rubber casters; Series 20, rubber-cushioned, steel gliders. Large, all-steel, saddle-shaped seats are cushioned with foam rubber latex. Seats and Tufflex-padded backs are upholstered with perforated Du Pont "Fabrilite"—a cloth-backed vinyl plastic—in green, brown, maroon, or gray. Model 17-A Jr. Executive Chair and Model 20-A Side Chair have flexible plastic armrests to match upholstery.

Standardize on Cosco Office Chairs in your offices. Ask today for a demonstration and see for yourself the outstanding features and advantages of Cosco Office Chairs . . . at leading office furniture stores everywhere.

HAMILTON MANUFACTURING CORPORATION • COLUMBUS, INDIANA

Also makers of COSCO Household Stools, Chairs and Utility Tables

COSCO Office Chairs

Good Seating . . . in good taste . . . is good business

5 OUTSTANDING comfort and construction features

1. New contour back curves two ways to provide the most restful support and insure maximum comfort.
2. Large, all-steel, saddle-shaped seat—cushioned with foam rubber latex.
3. Rubber-cushioned, steel gliders to protect floors.
4. Legs extended in rear to prevent back from touching or marring walls.
5. Seat, 18" high in front, slopes $1\frac{3}{4}$ " to the rear for extra comfort.

Clip this Coupon and Mail Today to

HAMILTON MANUFACTURING CORPORATION, Dept. P. COLUMBUS, INDIANA

Gentlemen:

Please send me, without obligation, the following information on Cosco Office Chairs:

- ☐ Name of nearest dealer.
☐ Complete catalog.

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____

it's the

LIGHT TOUCH LEAD

that does it!



"Mongols seem smoother and stronger to me, that's why I prefer them for report work"...states young Executive Secretary Ruth H. Meyers, Evanston, Ohio.



"Busy as I am, I have no time for pencils that break. That's why I always use Mongols"...asserts Traffic Manager Earl L. Smiley, Everett, Washington.



"Keeping records neat and orderly is simple with a pencil as smooth-writing as Mongols"...says Bookkeeper Barbara Ham, of Davis, Okla.

What's their preference after writing all day? MONGOL Pencils! For smoothness...strength...longer wear. If your office isn't using world-famous Mongols yet, specify them now!

Amazing
Light Touch Lead
...exclusive with

MONGOL

by EBERHARD FABER

TRADE MARKS REG. U. S. PAT. OFF.

APPOINTMENTS BY DIEBOLD

E. F. Collins has been named sales manager of the Visible Records Equipment Division of Diebold Incorporated, Canton 2, Ohio. His headquarters will be in the Canton general offices.



E. F. Collins, sales manager, Diebold Visible Records Equipment division.

At Houston, Tex., G. W. McDaniel, formerly branch manager at Nashville, will head office operations, where he is succeeded by K. M. Throop, Jr.

SIX APPOINTMENTS AND TWO NEW LITHOFOLD OFFICES

R. J. Blauner, president of the American Lithofold Corp., St. Louis, Mo., recently announced the following appointments:

Albert M. Bridell of Highland Park, Ill., has been elected a vice president of the company. He has been with the company since its incorporation 15 years ago, and moves up from his position of division sales manager for the Chicago area.

Leonard W. Bergmann, active in plant operation for thirteen years, and in charge of the company's New Jersey plant for four years, now serves as vice president and sales manager for the Southwest Division.

Alex Pomerantz, another 13-year man, sales manager in the Chicago area from 1946, now becomes assistant secretary and sales manager of the Northern Division consisting of seven states.

Ralph Rhue, who started in the Chicago office as estimator and salesman seven years ago, has been appointed Central Division sales manager in charge of Michigan and Ohio, with headquarters in Detroit where he went as district manager in 1950.

Richard Chesrown has been named district manager for the Toledo office at 538 N. Erie Street; and

Ross D. Dillon, manager for the Cincinnati office in the Federal Reserve Bank building.

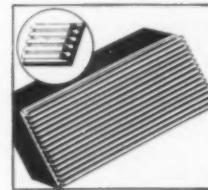
(Please turn to page 192)

New Remarkable Discovery!

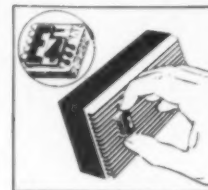
Make Your Own Rubber Stamps And Marking Devices In Minutes...



The type is cast in one piece to uniform height. The face of the type is deep and clear cut. All letters are in uniform alignment.



The base is also cast from rubber in one piece. Available in a wide selection of standard sizes as well as any special size or shape.



The type is locked into the base simply by the pressure of a finger. No slipping or moving out of line while printing. Rubber cushion under the base assures perfect impression and reproduction.

with Interchangeable Base-Lock Rubber Type

Saves money and eliminates waste motion when frequent changes make permanent stamping and marking devices impractical.

Revolutionary Base-Lock Rubber Type

- Cuts hours off marking and stamping operations.
- Saves money by using only ONE stamping device instead of 3, 4, or 5.
- Eliminates marking errors by reducing multiple operations to just ONE.

WRITE FOR FREE CATALOG
U.S. Rubber Stamp Co.

227 Fulton St., New York 7, N. Y. • CO 7-5714

RUBBER STAMPS

**BRASS STENCILS
STEEL STAMPS**

Gov't. Regulation Stamps

Made To Order

- Free 48 pg. Catalog
- Same Day Service
- Direct from Manufacturer

ORDER BY PHONE OR MAIL

KRENGEL MFG. CO.

229 Fulton St., New York 7, N. Y. • CO 7-5714



You'll get

BETTER PURCHASE ORDER CONTROL

with visible-tip follow-up folders

TAKE A TIP FROM US! When purchase order facts that mean money are visible on the tips of your order folders, *you don't have to remember!*

You'll save money and time with glance-action reference that speeds daily follow-up control on *every* purchase operation. You'll never miss a follow-up date, for the movable signals at the folder tops fairly *shout* the need for action.

Besides, these follow-up folders are easy to use. All you do is: (1) after handling a

matter, set the visible signal to next due-date; (2) simply pull the folders on the day marked for action.

These folders save countless hours of work. You *file* as previously, and *find* with greater speed—with no costly supplementary filing equipment. No cross-references, no stacks of paper to thumb through, to find the item you want. An *extra* saving: you can use the same kind of folders, or similar follow-up folders, for production scheduling and other jobs as well.

Remington Rand

WRITE TODAY FOR THE COMPLETE STORY!

FREE folder LBV 567 illustrates these and other multi-purpose Visible-Tip follow-up folders. Address Management Controls Reference Library, Room 1405, 315 Fourth Avenue, New York 10, N. Y.



Esterbrook® 444 DESK PEN SET



Choose the point you know they're sure to like

"Ink-Locked"
against
accidental
spillage



Green, black,
maroon,
gray or
clear base

**HOLDS 40 TIMES MORE INK THAN
ORDINARY FOUNTAIN PEN DESK SETS**

Few gifts are more personal than an Esterbrook 444—and none is more welcome. "Ink-Locked" base holds 40 times more ink than regular fountain pen desk sets. In addition, you can individualize each set with the right point for the way each one writes. World's largest variety of point styles to choose from. All points instantly renewable in case of damage.

Esterbrook®

AMERICA'S PEN NAME SINCE 1858

The Esterbrook Pen Company, Camden 1, New Jersey

The Esterbrook Pen Company of Canada, Ltd., 92 Fleet St., East, Toronto, Ontario

Copyright 1951. The Esterbrook Pen Company

SOUND-SLIDE FILM EXPLAINS ADVANTAGES OF HANGING FOLDERS

Office management groups and filing department personnel will find of interest a sound slide-film in color explaining the use and advantages of hanging folders. The film demonstrates the speed and economy of the hanging folder method of filing correspondence, invoices, orders, and other office papers. This record and film strip may be borrowed without charge from the Oxford Filing Supply Co., Inc., Clinton Road, Garden City, N. Y.

1 1 1

NEW MULTI-SPEAKER UNIT FOR KODAK SOUND PROJECTORS

A new multi-speaker unit for the Kodak Pageant Sound Projector, believed to be the first standard such speaker unit ever offered for use with a 16mm. sound projector, was recently announced by the Eastman Kodak Co., Rochester, N. Y. It is used with the regular speaker of the sound projector.

The new unit permits considerably greater flexibility in sound reproduction than has ever before been possible. As a result of this new development, four widely separated speakers may be used with the Kodak Pageant Sound Projector at one time.



Triple speaker unit makes for maximum flexibility in sound projection.

The great advantage of such an extended speaker set-up lies in the fact that the additional speakers permit sound reproduction to be precisely tailored for auditorium or audience regardless of existing acoustical conditions. With such a unit it becomes unnecessary for the projectionist to raise the sound volume to such high levels as to impair fidelity and cause unpleasant listening.

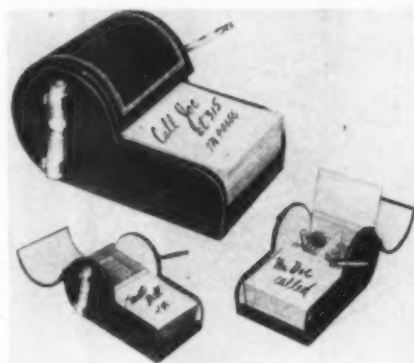
Each of the speakers in the new unit is an 8-inch speaker mounted in individual baffles. One is supplied with a 35-foot cord; two with 45-foot cords. Assembled together, the three speakers form a convenient carrying case which matches the

Kodak Pageant Sound Projector case exactly in appearance. The complete unit weighs only 17 pounds, and will enclose a 2000-foot reel.

The speakers are equipped with connectors which make it easy to arrange them in the correct electrical hook-up.

1 1 1

PERMO "TIME-GUARD" MEMO FEATURES 3-MINUTE TIMER



A new memo box for desk or telephone table top, which features a "3-minute timing-glass" to time toll calls, is now being marketed by the American Binder Company, 230 Fifth Ave., New York.

Called The Permo "Time-Guard", this new memo box also has the following features: a propel-repel pencil which clings by magnetic action to the box, a perpetual calendar, a compartment for keys, stamps, etc. and a large supply of 4"x4" memo sheets. The special timing glass is guaranteed not to exceed three minutes.

The Permo "Time-Guard" is being manufactured in both genuine leather and imitation leather, and is available in the twelve well known colors—brown, red, green, maroon, blue, ivory, beige-parchment, forest green, Florentine gold, tangerine, Copenhagen blue, dusty rose.

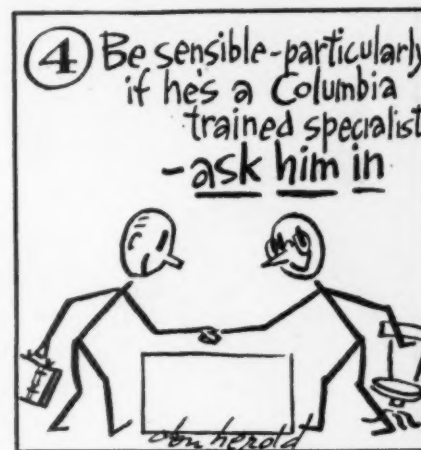
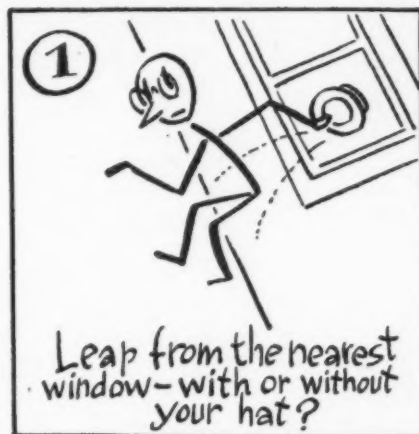
1 1 1

M. V. MILLER

M. V. Miller, president of the Royal Typewriter Co., Inc., New York, died suddenly on August 28, following a heart attack while playing golf at the Winged Foot Golf Club at Mamaroneck, N. Y. Mr. Miller had been with the Royal company for thirty years and president for five. He was also president of the Regal Typewriter Co., Inc., and the Royal Typewriter Co., Ltd. of Montreal.

(Please turn to page 194)

What should you do when a Ribbon & Carbon Salesman calls?



Yes, ask the man in.

For, "carbon paper is not just carbon paper," despite what a lot of people think.

Actually, there's a wide range of difference (and results) even among the finest brands. A sheet may be just right for one secretary and all wrong for another—it may work well on one machine making one copy and be unsatisfactory on another making seven copies. The girl's touch, weight of paper and type of platen are all to be considered. A good, sharp-writing, clean handling carbon paper will improve any girl's morale and work.

Your Columbia stationer and the Columbia factory representative can quickly find the answer to any ribbon or carbon problem.

Columbia

"Manufacturers of Fine Carbons and Ribbons for Nearly Half a Century"

So, ask the Columbia man in and let him make an on-the-spot analysis of your special needs. He's pretty sure to give your office greater ribbon and carbon satisfaction at a reduced cost. Better still, send the coupon below, and your local Columbia man will come at your convenience... no obligation, of course.



COLUMBIA RIBBON & CARBON MFG. CO., Inc.
Main Office & Factory:
150-10 Herb Hill Road, Glen Cove, L. I., New York
New York Sales and Export: 58-64 West 40th Street
Branch Offices and Distributors in principal cities
Consult your local Telephone Classified Directory

COLUMBIA RIBBON & CARBON MANUFACTURING CO., Inc.
150-10 Herb Hill Road, Glen Cove, L. I., N. Y. P-10

O.K., Let's see what your man can show me about ribbons and carbon copies.

Name _____

Position _____

Company _____

Address _____

City _____ Zone _____ State _____

Here's Why WE PREFER

SEA FOAM BOND

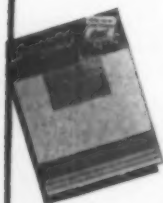
America's
FAVORITE
Lightweight
Business
Paper



- Saves valuable filing space
- Cuts copying time—gives extra, legible carbons
- Has stand-up stamina for filing
- Standardizes record and communication systems
- Takes hard wear and erasures
- Lightweight—reduces postage

Every Sheet is TOP QUALITY!

Write for
SEA FOAM'S
Free Test Kit



Demonstrates how Sea Foam fills the bill for all thin paper needs. On your company letterhead, please.

BROWNVILLE PAPER COMPANY
The Mill of Fine Lightweight Papers
43 Bridge St., Brownville, N. Y.

PAYROLL TAX MACHINE FIGURES FOAB DEDUCTIONS

An automatic tax computer, which gives the correct payroll deductions for any employee's salary, is being made by the Kirk Plastics Co., Los Angeles. The unit, which is made of Celanese acetate plastic, weighs 16 ounces, and is nine inches long by four inches high. Known as the Ayres Calculator-D payroll tax machine, the device indicates the exact Federal Old Age benefit and withholding tax deductions for each paycheck, merely by the turn of a knob.

1 1 1

TYPEWRITER STAND WITH ELEVATOR DEVICE

The Royal elevator typewriter and office machine stand made by Maso Steel Products, 81 W. Van Buren St., Chicago, Ill., is equipped with an improved elevator device,



Streamlined Royal elevator stand with improved elevator device

all parts being fully enclosed and streamlined in appearance. The top brackets of the elevator device are extended outward to cover the all-steel housing for the casters, and the actuating rod to control the opposite legs is fully enclosed. All models of the stand are being equipped with the device.

1 1 1

IMPROVING OFFICE PLANNING AND CONTROLS

"Improving Office Planning and Controls" is title of booklet published by the American Management Association, 330 West 42nd Street, New York 18, N. Y., being No. 128 in the association's Office Management Series. The booklet contains the following papers presented at the Office Management Conference of the AMA held in New York City in October 1951:

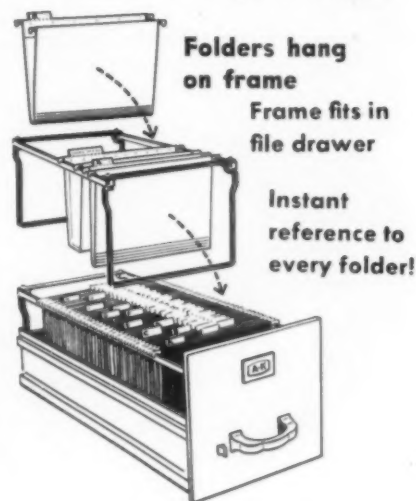
A program for Office Expansion;

Don't File It — HANG IT!

in **Oxford PENDAFLEX**
HANGING FOLDERS

Cut Filing Costs

20% or More!



Send for Catalog

OXFORD FILING SUPPLY CO., INC.
Clinton Road • Garden City, N. Y.

*stands up
under pressure*



An Omega lead takes a lot of pressure without breaking... thin, lead holds a needle point, makes clean, sharp figures with lightest pressure. 24 brilliant colors, ends colored for quick selection. Ask for sample on your business letterhead.



The Omega is a Tryrex Pencil — shaped to fit your hand — will not roll.

RICHARD BEST PENCIL CO.
Dept. P Springfield, N. J.

OMEGA
COLORED PENCILS

Makers of
ROYAL SCOT and FUTURA Pencils

The Office Standards Impact; Manpower Budgeting Control; The Office Operations Budget; Charting Clerical Operations for Analysis of Clerical Functions; Printed Forms Control; Discussion notes; and Protecting Records in Time of War.

These papers were selected for inclusion in the Office Management Series with a view to presenting material of lasting reference value and general interest. The price of the publication is \$1.00 to members, and \$1.25 to nonmembers.

1 1 1

NATIONAL BUSINESS SHOW GRAND CENTRAL PALACE, N. Y.

The 1951 National Business Show will be held in Grand Central Palace, New York, N. Y., October 22-27. Well over 100,000 people attended the 1950 Show, and it is expected that the attendance at the 1951 Show will hit close to 145,000. The increased attendance foreseen in 1951 is attributed to an ever greater volume of paper work per dollar of sales than during World War II, hence the need for time and labor saving equipment, systems and appurtenances. The ratio of office workers to factory workers is now placed at four to ten. This radical increase is attributed to widely varying circumstances, not the least of which is governmental forms, directives, and reports that must be completed.

The impact of this and other increased paper work is well attested to by various associations cooperating with the National Business Show such as The Systems and Procedures Association of America, Records Management Association, The National Association of Cost Accountants, National Association of Manufacturers and others.

According to Rudolph Lang, managing director of the show, key officials in many companies have revealed that they plan to show new equipment at this year's exposition. Unlike many industries, there has been no great number of new domestic companies entering the office machine and equipment field. However, there has been, he said, a definite swing towards broadening the lines of machines and equipment offered. Although not numerous, 1951 will see more new items which have been in the process of development and perfection than ever before since the close of World War II, despite the difficulties of material shortages that the industry may encounter.

The Office Week Forum, a sym-
(Please turn to page 196)

IDEAS FOR YOU IN THE MAGAZINE OF *Standard Register* **Paperwork Simplification**



Daily ledger posting on continuous forms

In the trust department of The First National Bank of Chicago, their procedure of punched card accounting produces something new. It's a convenient customer account ledger, presenting all essential statement information—to which current transactions are posted simply by filing the daily records tabulated in continuous form. The originator, Mr. C. M. Weaver, describes this highly successful innovation in PS. 23.*

Also in this magazine: *Work Simplification*, the Scientific Method, by a leading authority. Today our Representatives are employing this technique on behalf of customers—re-examining Standard Register systems, applying auxiliary devices and equipment—for further savings.

Record systems actually simplify paperwork when you:

- A. Develop the best procedure
- B. Simplify the writing process
- C. Design the most efficient form

These are the *three* avenues for complete improvement of any system, for maximum savings in time and office manpower.

*Write for copies of *Paperwork Simplification* (PS) free. The Standard Register Company, 410 Campbell St., 1, Ohio.



KANT-SLIP
continuous forms

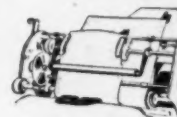


Feeding-aligning device:
THE REGISTRATOR
PLATEN

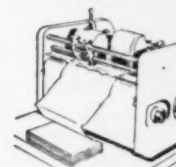


AUTOMATIC LINE
FINDER

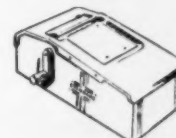
Advances form into
new writing position
in one motion



DUAL FEED
Registers 2 different
forms for 1 continuous
typing operation



BURSTER-IMPRINTERS
Sign, date, number,
trim, tear off, stack
Kant-Slip forms



FORM-FLOW
REGISTERS
Better records
... by hand



UNIT ZIPSET FORMS
Carbon interleaved



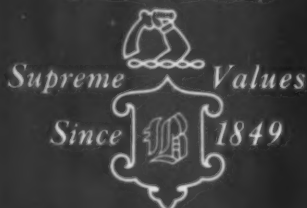
SO MUCH for SO LITTLE

For over 100 years, L. L. BROWN record and letter papers have been widely used for governmental and business records which must *withstand time and hard handling*; and for business and professional correspondence which must be *outstandingly impressive*.

Although their superiorities have been time-tested and proved beyond question, L. L. BROWN papers add negligibly, *if at all*, to total accounting and correspondence costs. *Paper is but a minute part of such expenses*. The difference in cost between the best and the rest is hardly appreciable.

At little or no additional cost, you can be sure your records will last — that your letters will reflect you and your organization impressively. You need merely specify L. L. BROWN papers. Your regular supplier of record books, forms and stationery knows them thoroughly. He will gladly recommend those best suited for your individual needs. L. L. Brown Paper Company, Adams, Massachusetts.

L. L. BROWN RECORD and LETTER PAPERS



(Continued from page 195)

posium of the best and latest thinking in all segments of the office management field and one of the main features of the Business Show each year, will be under the direction of J. Arthur Grundy of Remington Rand Inc. Theme of the symposium is "Manpower, Machines and Methods." Talks will be given by authorities on every segment of the office management field.

One of the outstanding features of the Show will be the exhibit of the Combined Armed Services. This exhibit will be an active display of new and standard office equipment and machines and will show how they are integrated with the requirements of specific branches of the various Services.

All machines and equipment will be manned and supervised by trained personnel and will be an introduction of the industries to many interesting adaptations of standard manufacturers' items slanted to requirements of branches of the Armed Services. In conjunction with the Combined Armed Services exhibit there will be a collection of 100 original paintings executed by U. S. Navy Combat artists. The majority of the paintings were done under actual combat conditions.



VISIBLE TIP FOLLOW UP FOLDERS FOR FAST ACTION



Visible Tip follow-up folders allowing fast action after one glance are the subject of a new booklet recently issued by Remington Rand Inc. The visible index label shows what records are inside the folder, while the visible-tip colored signal flashes the next due-date. You won't forget to remember with visible tip follow-up folders, which can be adapted to production scheduling, purchase orders, customer service, collection, sales orders, medical follow-ups and accounts receivable. Request pamphlet LBV 567 from Management Controls Division, Remington Rand Inc., 315 Fourth Ave., New York 10.

Visible tip colored signals, moved easily and crimped to stay where set, highlight each folder for action when called for. Pen-posting is eliminated since merely moving the signal indicates any change that may have occurred, and the incorporation of folders into present filing systems does away with the necessity of a separate file for follow-up.

Special sizes of the folders include 8x5½ inches and 6x9 inches, as well as the regular letter and legal sizes. The ability of these folders to be used over and over again for other follow-up jobs eliminates the need for expensive replacements.

SELF-CONTAINED AIR CONDITIONER FOR OFFICES, ETC.

A new self-contained air conditioner—one that takes "little more floor space than an easy chair" has been introduced by The Trane Company, La Crosse, Wis. It has been designed to save floor space, to cut service and maintenance to a minimum, and is said to be quiet in operation. Designed for use in offices, laboratories, drafting rooms, factory spot installations, and so on, the new air conditioner is a complete packaged system, requiring only one electrical and three piping connections. Printed matter available.

REDIFIXT BUSINESS FORMS CARBON INTERLEAVED

Continuous or Single Sets

Invoices • Sales Slips

Shipping Records • Accounting
and Tabulator Bookkeeping

Machine Forms • Any Form for
Any Business Purpose

NO PRICE RISE ON RediFixt W-2 TAX FORMS for 1951

*Consolidated
Business Systems, Inc.*

DEPT. 006
30 VESEY STREET, NEW YORK 7

HAMILTON INTRODUCES LINE OF OFFICE CHAIRS

A comparative newcomer in the field of all-metal office seating, entering the field a year ago with a secretarial type chair with a fixed back and height adjusting mechanism, the Hamilton Manufacturing Corp., Columbus, Ind., announces plans for fullscale production of a complete line of Cosco office chairs, including six models of three basic units. The new line will include a second secretarial chair, similar to the original, featuring a flexible spring tension back. Both models are adjustable in height between 16" and 20" and have a curved, upholstered backrest that adjusts up and down and tilts to follow the back. The backrest is adjustable for the depth of seat. The seat is cushioned with foam rubber. The upholstery is in Du Pont Fabrilite.

Designed primarily for men, are two models of Series 17 Cosco office chairs. One is a junior executive chair with plastic armrests. The other is an armless general office chair. These revolving chairs for men provide six easy adjustments—seat depth; seat height; seat slope; tension of spring-action tilting back; height of backrest and angle or pitch of backrest. The chairs have an extra-large, saddle shaped foam rubber cushioned seat and padded back, upholstered with perforated Du Pont Fabrilite.

Completing the line are the two Series 20 form-fit chairs, one with arms and the other armless, featuring a 16 $\frac{1}{4}$ " x 13 $\frac{1}{4}$ " contouring type backrest which has a unique two-way curvature to ensure proper posture and comfort. These too have the saddle-shaped seat cushioned foam rubber latex.

1 1 1

DESK-MODEL COPYING MACHINE ANNOUNCED BY OZALID

A new desk-model copying machine is announced by Ozalid, Division of General Aniline and Film Corp., Johnson City, New York. The new machine can make in one hour up to 1,000 copies of different originals. Copies can be up to 16" wide, any length. A letter-size copy costs about one and one-half cents including operating costs and machine depreciation, it is stated.

Called the Ozamatic, the new machine represents a revolutionary step in diazo copying, and is claimed to pave the way to tremendous paper-work savings in every type of busi-

(Please turn to page 198)

Tip from America's Top Secretaries



"Neater work . . . and much faster, thanks to that numbered scale"

...says ELLA B. RANSOM,
Executive Assistant to the President,
The American Museum of Natural History

MICROMETRIC CARBON PAPER saves TIME, saves STATIONERY

America's top-flight executive secretaries prefer Webster's MultiKopy Micrometric Carbon Paper because its numbered scale eliminates guesswork . . . shows just how many lines of typing space remain on a page. The edge scale is handy for smudge-free removal of carbons, too.

Office managers prefer Micrometric because it means better typing production, less spoilage of stationery.

Webster's MultiKopy Micrometric costs no more than other quality carbon papers, while its exclusive numbered scale helps secretaries and typists to produce more with less waste. It's available in a wide variety of weights and finishes.

Next time you need long lasting carbon papers, type-writer ribbons or duplicating supplies, order Webster's. Consult your nearest dealer or write to —



F. S. WEBSTER COMPANY

7 Amherst Street, Cambridge 42, Mass.

**Are YOUR
records safe
BOTH ways?**



GET RESULTS WITH RISING

SECURITY for business records doesn't stop with protection against fire, theft and other risks. Be sure your records are inscribed on Rising No. 1 Index... the paper that stands up to the wear

and tear of folding, thumbing, filing and long storage.

Call your printer today. He's ready to show you samples of this remarkably rugged, smooth, uniform stock.

Rising No. 1 Index

- White and four colors
- 100% rag
- 2 sizes
- 5 weights

**WHEN YOU WANT TO KNOW
...GO TO AN EXPERT!**

Rising Papers

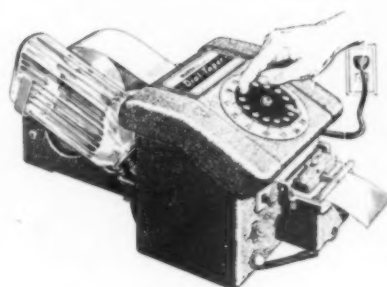
**ASK YOUR PRINTER
...HE KNOWS PAPER**

Rising Paper Company, Housatonic, Mass.

(Continued from page 197)

ness. It will reproduce in seconds a photo-exact copy of any translucent invoice, letter, or record. Two or more complicated reports can be combined in one sheet of paper in minutes. The company states that scores of new applications have been opened for the Ozalid process in accounting, purchasing, order handling and all other general businesses and departments.

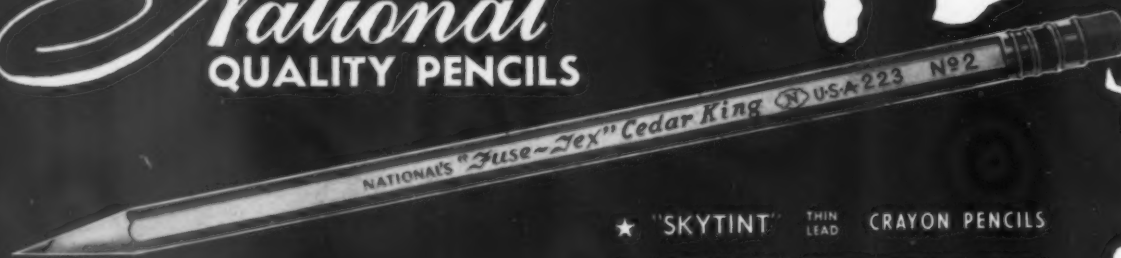
**AUTOMATICALLY-OPERATED
GUMMED TAPE MACHINE**



A new gummed tape machine that automatically produces desired lengths of moistened tape at the flick of a telephone-type dial has been introduced by Marsh Stencil

FOR EVERY USE ...

National
QUALITY PENCILS



- ★ "SKYTINT" THIN LEAD CRAYON PENCILS
- ★ "CORSAIR" COLORED INDELIBLE PENCILS
- ★ AS GOOD AS THE BEST
- ★ WRITE FOR FREE SAMPLES

*Insist That Your Dealer
Quote You Or Write Us
Direct For Samples And Prices*

NATIONAL PENCIL COMPANY • SHELBYVILLE • TENN.

220 FIFTH AVE.

**NEW YORK
N. Y.**

Machine Co., Belleville, Ill. The operator simply selects on the dial the length of tape needed and with a twirl of the dial completes the operation. The tape, moistened with warm water, is cut off clean and ready to apply to the carton without rubbing. Marsh says that if you use as little as one roll of 3" tape per day, the "tape and time savings" can pay for the Dial-Taper in less than six months.

1 1 1

TABLE-TOP COLLATOR ANNOUNCED BY THOMAS



A new table model collator has been added to its line of five floor models, by the Thomas Mechanical Collator Corp., 30 Church St., New York, N. Y. The new collator is said to combine the best structural and operating features of the larger units with both space-saving and economy. The feed mechanism is the "Ejectomatic Feed", standard on all models. Complete inspection of the collated set is instantly possible. The new table model measures 15½" wide, 15½" deep, by 16¼" high. It is available in a five-bin and an eight-bin type.

1 1 1

NEW PHOTOGRAPHIC PAPER ELIMINATES DARKROOM HANDLING

A new photographic reproduction paper which produces "black on white" photographic intermediates directly from blueprints and other negative originals without the need for darkroom handling or special reproduction equipment, has just been announced by the Eastman Kodak Company.

The new paper is named Kodagraph Repro-Negative Paper. It can be exposed on standard drawing reproduction equipment, in ordinary room light, and processed with standard photographic chemicals, being similar in these respects to Kodagraph Autopositive Paper, a direct-to-positive printing drawing reproduction material. Used as a companion material for Autopositive, it is stated, Repro-Negative Paper now makes it possible for a

(Please turn to page 200)

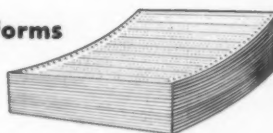


**UARCO makes a full line of tabulating forms
for you to choose from:**

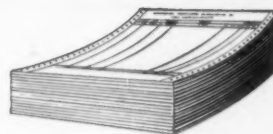
custom forms



stock forms



imprinted stock forms



The quality of these forms is the finest.

You can order them unfastened or in a wide choice of fastenings:

sewed



stapled



glued



and bump-
fastened



Not only do you buy quality forms,

you get dependable service



from Uarco.

Service that's close by with trained tabulating representatives in every

major city



Five well-located plants



assure you good delivery. And behind all of it

... Uarco's nearly sixty years'



experience. Want a source

you can depend on, for tabulating or any other

type of business form? Call



Uarco.

UARCO Incorporated
Factories: Chicago; Cleveland; Oakland; Deep River, Connecticut;
Watseka, Illinois—Sales Representatives in all Principal Cities

UARCO
INCORPORATED

UARCO Incorporated
Room 1619, 141 W. Jackson Blvd., Chicago 4, Illinois
Please send your free booklet containing actual samples of UARCO
CONTROL PUNCHED FORMS

Name.....
Firm.....
City.....
State.....





At one of the Mex-R-Co plants, a huge power press — exerting over 2500 pounds pressure per square inch — molds the company's standard-size firebrick.

Mexico Refractories Company
Better Refractories



MEXICO, MISSOURI

Out of Nature's Raw Materials ...QUALITY for Industry

The city of Mexico, in the heart of Missouri, is central to some of the world's finest deposits of natural fire clays. Out of these clays the Mexico Refractories Company makes matchless firebrick, of every sort, for every purpose—brick to hold boiling molten steel, to cradle reacting chemicals, to line the furnace of a man's home.

Mexico Refractories has set itself the slogan and the objective "Better Refractories" and has worked with the best resources of nature and modern science to achieve them. A hard business, in every sense; a man's work—producing the power behind power, utilizing natural matter in an almost supernatural manner.

Out of man's ingenuity, we have learned to refine our natural gifts to a high level. In paper, as in firebrick, Americans seek quality. For its letterhead, the Mexico Refractories Company has chosen Strathmore paper—an acknowledgment of confidence from one great craftsman to another.

Your pride in your business is reflected in your letterhead. With Strathmore, you cannot go wrong—in taste, in quality or in the impression you create.

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Writing, Strathmore Bond. Envelopes to match converted by the Old Colony Envelope Company, Westfield, Mass.

STRATHMORE MAKERS
OF FINE
PAPERS
Strathmore Paper Company, West Springfield, Massachusetts

(Continued from page 199)

reproduction department or shop to standardize on positive photographic intermediates in its quantity-print production, regardless of the type of originals available.

The new paper is a silver-sensitized, medium-high-contrast material which is similar to conventional photographic papers in that it prints a positive from a negative and vice versa. However, since no dark-room handling is required and no special equipment is necessary, it is expected that it will fit in readily with the practices of most reproduction departments and shops.

Kodagraph Repro-Negative Paper can be used to reproduce just about any type of negative line original—old or new, in good condition or poor, the Company announces. It assures crisp, legible intermediates, with dense black lines on an evenly translucent, extra thin, durable paper base. These intermediates will print back at uniform, practical speeds and will stand up under hundreds of printings according to the Company's statement.

Kodagraph Repro-Negative Paper will be available in a variety of standard roll and sheet sizes to meet the needs of engineers, draftsmen, and blueprinters everywhere.

1 1 1

KARDEX INTERLOCKING TUBE EQUIPMENT



A variety of housings to assure the proper arrangement of large lists is offered by Remington Rand Inc. through Kardex Interlocking Tube Equipment. Unique durability which withstands constant handling is incorporated in the compact frames to save office space and cut reference time. This equipment is designed to hold permanent cross index or reference lists in a manner that brings thousands of names immediately before the eye and under the fingertips.

Simplicity and practicality are the basis of Kardex Interlocking Tube Equipment. Scored strips of paper are first typed with necessary information, then separated and inserted in flexible tubes of transparent celluloid. The tubes, which are available for indexing one to three

lines of typed information, are flexed to spring beneath the sides of the Interlocking Tube Frame, allowing any desired arrangement. Housings to which this basic Interlocking Tube principle can be applied include rotaries, desk stands, wall brackets, roster boards, panels and cabinets.

For details, request pamphlet KD 573 on Kardex Interlocking Tube Reference Equipment from Management Controls Division, Remington Rand Inc., 315 Fourth Avenue, New York 10, New York.

1 1 1

STRUCTURAL RUGGEDNESS FEATURES FIBRE CARRYING CASE



High impact resistance coupled with extreme light weight are the outstanding features of a recently introduced molded fibre carrying case for projectors and cameras. Manufactured for the Revere Camera Company by Hawley Products Company of St. Charles, Ill., the carrying case has been designed to combine smart appearance and utility with structural ruggedness.

The material as an accreted or wet formed structure from cellulose fibres, a melamine resin, and Hycar latex. High impact resistance is obtained through the use of the Hycar rubber. The wet preformed material sheets are pressure molded into the camera carrying cases.

Practical military applications for the new type of carrying case are numerous. Typical military equipment which could be housed in these laminated fibre containers include aerial survey cameras, binoculars, range computing devices, and transits, etc.

Other properties in addition to high impact resistance afforded by Hycar latex include excellent re-

(Please turn to page 202)

"I'm forever making
DOODLES

....Pesky Doodles in the Air!"*

Tracer light photos reveal costly "doodles in the air". Tracer light photos are made with a single small light attached to each hand—sometimes to equipment. They show how many motions are required to do a specific job—like turning out one set of business forms.

American LITHOSTRIP Continuous Forms wipe out wasteful, costly "doodling" . . . eliminate six unnecessary, profit-eating moves in record keeping! Distribution and control are simplified and speeded. A SINGLE typing produces records for all departments . . . fast!

*"DOODLES in the AIR" are unobserved, WASTE MOTIONS...extra manipulations of hands and equipment. Invisible red tape that snarls production and leaves a trail of errors, annoyance and fatigue.

GET YOUR FREE COPY OF "TIME AND MOTION STUDY IN LIGHTS"



AMERICAN LITHOFOLD CORP.

500 Bittner Street • St. Louis 15, Missouri

Without obligation, SEND ME the new illustrated brochure TIME AND MOTION STUDY, showing how we can eliminate "doodles"—save important time, work and money with LITHOSTRIP "PLANNED BUSINESS FORMS."

COMPANY NAME

ADDRESS

CITY ZONE STATE

SIGNATURE

Copyright 1951, American Lithofold Corp.

"Papyrus!! Bah -

give *me*

EAGLE- PAPERS



paper makes a difference!"

JUST SAY

EAGLE-A

Bonds • Writings

Ledgers • Onion Skins

Index Bristols • Manifold

Covers • Texts • Papeteries

Wedding Bristols

Typewriter and Boxed Papers

Paper and Paper Boards for
engineering, industrial and
technical uses.



AMERICAN WRITING PAPER CORPORATION
HOLYOKE MASSACHUSETTS

MORGAN PAPER COMPANY
—pioneers of modern toilet tissue—celebrates

DIAMOND JUBILEE ANNIVERSARY




MORGAN pioneered the perforation of
toilet tissue . . . first to create controlled
dispensers and tissues . . . first to perfect
the new Velvet Finish tissue! 75 years
of paper progress is now symbolized by
a great Diamond Jubilee!



**STOPS PAPER WASTE
SAVES DOLLARS**

Springfield Oval

A MORGAN first! vents paper waste. Use
The Springfield Oval Dispenser . . . auto-
matic lock device pre- Velvet Finish genuine
Springfield Oval tissue.

		
UNITY — Velvet Finish Interfold tissue Economical! Sgl. fold 4½ x 5.	BIFOLD — Velvet Finish combed fibre Interfold tissue Doublefold.	HYGIENIC — Bleached, finest quality Velvet Finish sanitary oval tissue.

75th **DIAMOND JUBILEE
ANNIVERSARY**
Morgan
PAPER COMPANY
LITITZ, PENNSYLVANIA

(Continued from page 201)

sistance to oils and greases, moisture vapor transmission, and abrasion—all of which are prime requisites for carrying cases to be used for housing delicate instruments.

Further information in regard to design and construction is available from B. F. Goodrich Chemical Co., Rose Building, Cleveland, Ohio.

1 1 1

AUTOMATIC PENCIL TYPE ERASER



A new, semi-automatically propelled ink and pencil eraser has recently been put on the market by the Gits Molding Corporation, 4600 W. Huron St., Chicago, Ill. Unlike conventional models, the eraser stick is held in a plastic case which is tapered at the opening so as to permit the user to remove single letters, dots and lines without the use of a shield. The plastic case for the eraser stick is in the shape of a pencil and opens at the center, permitting the user to insert refills when required. The eraser stick is made from a special abrasive formula which erases ink, pencil and typewriter marks. By turning a ferrule at the center of the case the user can eject the eraser stick to maintain a convenient erasing length.

1 1 1

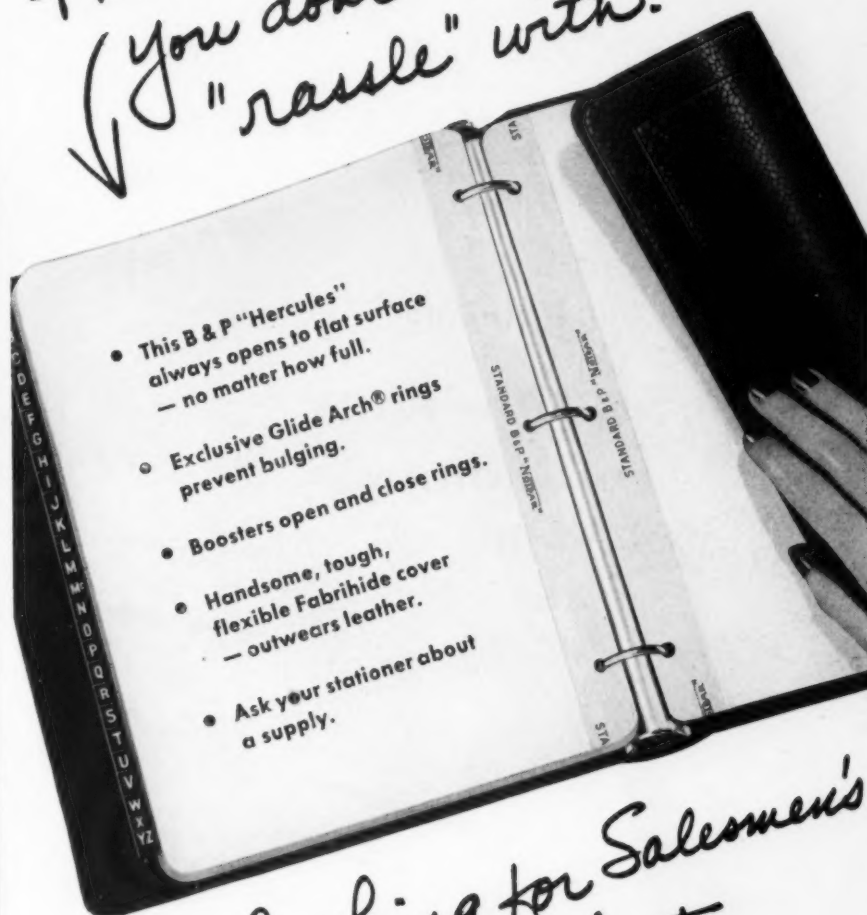
USE CATHODE RAY STORAGE ON ELECTRONIC CALCULATORS

The cathode ray tube storage system developed by Prof. F. C. Williams, noted English radar expert, is being introduced by International Business Machines Corporation into its new electronic calculators, the company reveals.

That IBM will use the Williams system under a licensing agreement

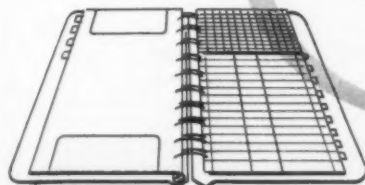
(Please turn to page 204)

Joe-
Here's a ring book
you don't have to
"rattle" with. - F.M.



Just the thing for Salesmen's
price and data sheets,
too!

872
635
1,507



FOR EVERY RECORD — A WAY TO KEEP IT

FEDERAL IS TOPS

ON COMPLEX
BUSINESS FORMS



If you need complicated carbon-interleaved forms of any size or combination of sizes to speed up distribution of information, cut down clerical errors, reduce your record-keeping costs . . . call on Federal! We design and print forms to solve your every business problem.

Federal forms are precision-printed on the fastest, most modern machines available. Federal service is prompt. Federal prices are attractive. Ask us to quote on your next job.

Some Federal Specialties: Multiple carbon forms . . . carbon - interleaved statements . . . voucher and payroll checks . . . forms requiring spot carbon or die-cut carbon . . . business machine forms!

FEDERAL
Business Products, Inc.

PRINTERS OF BUSINESS FORMS SINCE 1926

90 GOLD ST. • NEW YORK 38 • CO 7-8850

(Continued from page 203)

with the National Research Development Corporation of London, also was announced yesterday by W. E. P. Johnson, a director of NRDC, at the inauguration of the Manchester University Digital Computer in Manchester, England. The agreement gives IBM full use throughout the world of NRDC patents in the computing field, including many involved in the new Manchester machine, of which Dr. Tom Kilburn is co-inventor with Prof. Williams.

In the cathode ray storage system, information required in a calculation is stored in the form of dots and dashes on the face of the tube in a manner similar to the projection of a picture on the familiar home television tube. The information is read back from the tube to the electronic computer in a few millionths of a second, by passing the cathode ray beam over the same area. As many as 2,048 items of information have been stored on a cathode ray tube with a 24-square-inch screen.

NEW LOW-COST COPYING MACHINE ANNOUNCED BY BRUNING



Introduction of a new, low-cost Copyflex machine, Model 20, for making copies in all phases of business and industry, is announced by the Charles Bruning Co., 100 Reade St., New York, N. Y. It offers a 46-inch printing width with exposure speeds up to 95" per minute. The only installation required is connection to a 60 cycle, 115 volt, alternating current line. Fifty and 25 cycle machines are also available.

Copywork may be done on Copyflex sensitized paper, acetates, films and cloths, which may be handled safely and conveniently under

ordinary office illumination. Dark rooms, developing trays, etc. are unnecessary, and since no vapor developer is used, there is no need for exhaust ducts or extra ventilation.

SMART OFFICE FABRICS

The need for smart office draperies that will stay that way with little care is filled by a new line of Fiberglas fabrics. These well-styled hand-print draperies in a Chrysler building office typify 40 different color-design combinations just introduced



by Witcombe McGeachin & Co., New York manufacturers. The fabrics will resist rough handling, won't stretch or wrinkle, will resist fading, and are impervious to heat or flames; also, they will launder easily without shrinking.

NEW EQUIPMENT SHOWN AT BRITISH OFFICE EXHIBITION

Several new products were exhibited at the Business Efficiency Exhibition recently concluded in London, sponsored by the Office Appliance Trades Association of Great Britain.

Roneo Ltd., 17 South Hampton Row, London, W.C. 1, exhibited an electronic stencil maker, stencils being for use on an ordinary duplicator. By a series of electronic impulses, the machine makes an exact replica of any written, drawn or composite matter, including photographs in twenty minutes, it is said. Color reproductions can be made on any duplicator suitable for taking colored inks.

A "mechanical bank clerk" was demonstrated by Universal Postal Frankers Ltd., Frankopost Works, Angel Road, London, N. 18. This is an electrical machine which will count, separate, and endorse if necessary, bank notes, checks, and receipts at a speed of between 50,000 and 60,000 per hour. It can be set to let no paper through which is more than .003 inch in thickness,

(Please turn to page 206)

For Outstanding Achievement
...in the field of letters

September 10, 1951

J. J. Jones Company
New York City
New York

Dear Mr. Jones:

Every letter is truly a masterpiece of typing results when typed with Remington Rand Nylex -- the all nylon ribbon.

Nylex ribbons were conceived and developed first by Remington Rand. These are the only ribbons which combine the features of extra long wear and printing durability with outstanding printwork and consistency of impressions.

Economy is built into Nylex -- they outlast ordinary ribbons as much as 10 to 1 in actual field test. Less frequent ribbon changes mean savings on ribbon purchases.

Nylex ribbons will materially reduce your ribbon costs -- and produce the kind of results that will give your correspondence the dignity and prestige it merits.

REMINGTON RAND INC.
BUSINESS MACHINES & SUPPLIES DIV.

Nylex

all nylon ribbon

Remington Rand's exclusive, better-than-ever inking formula for Nylex, the all nylon typewriter ribbon, gives you everything you could hope for in tangible typing results. Nylex produces a darker, clearer, sharper write than ever before... truly "prestige-building" printwork! And Nylex ribbons are so durable, you'll find ribbon costs decreasing as typing quality rises.

for that "Special" need
...heavy duty Nylex

A "heavy duty" Nylex ribbon is available for those "ribbon-killing" operations... accounting machines, billing machines, and electric typewriters with hard platens (for multiple copy production). "Heavy Duty" Nylex is engineered to withstand the ultimate in pounding punishment!

Remington Rand

Business Machines and Supplies Division
Room 2276, 315 Fourth Avenue, New York 10, N.Y.

☐ Please send me the folder on Nylex ribbons, RSR 141.

NAME _____

FIRM _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

FREE
New brochure
on Nylex
Ribbon...
yours for
the asking.

Button and String...

OR

... Safety Metal Clasp

HEAVY DUTY ENVELOPES

Sheppard

ENVELOPE CO.
1 Envelope Terrace
Worcester 4, Mass.

Write today for Free Sample and Price List.
Dept. #15.

(Continued from page 205)
or for medium thicknesses of card-board.

An automatic letter writer was displayed by Adrema, Ltd., 27-29 Telford Way, Acton, London, W. 3. This is a special attachment to the firm's standard addressing and letter reproducing machine. It enables the address, name, and a salutation to be matched into a letter, indistinguishable from the text.

A printing calculator appeared in the exhibit of British Olivetti, Ltd., 10 Berkeley Square, London, W. 1. This adding machine prints automatically credit and debit balances, multiplicand, multiplier, product, dividend, divisor, quotient, and remainder, and nonetheless is only a ten-key machine.

A letter-folding machine, which it is claimed folds and inserts any kind of letter in envelopes, and then seals the envelope, was shown by Unifold Mailing Machines Ltd., 20 Paxton Place, Gipsy Road, London, S.E. 27.

Duplicator, hand operated, featuring an automatic drum scraping apparatus, that leaves the drum clean after every run, was demonstrated by Ellams Duplicator Co., Ltd., 5 Dean St., London W. 1. A special device enables seven differ-

ent thicknesses of ink to be printed so that variations can be made in typing to emphasize special paragraphs. The machine will run off a hundred copies a minute.

MULTI-TIME CARD SAVES HANDLING AND TIME

New eight-in-one Multi-Time card, which is claimed to make for substantial economies, available in sizes to fit all standard time clocks, was recently announced by Pattison-Lundal Co., 4303 N. Milwaukee Ave., Chicago 41, Ill. As its name suggests it is a multiple use time card, being actually eight cards in one — eight individual sheets stapled and tabbed in a cardboard back. A strip of carbon is provided on the back of each sheet under the space where the employee's name and clock number appear. Consequently, when the name and number are filled in on the top sheet (by hand, typewriter or addressograph) they are at the same time duplicated on all seven sheets below. After the end of the first week, or other work period, the top sheet is removed. The sheet underneath, already filled in, is ready for use.

Weldon Roberts Erasers

Correct Mistakes in Any Language



JET
Eraser

**HI-POPULARITY
'CONVENIENCE'
ERASER in Attractive
Transparent Holder**

Cures eraser "losers", gratifies eraser users. Saves no end of time. Cylindrical stick eraser of finest rubber; choose RED FOR PENCIL ERASING, GRAY FOR INK.

POCKET CLIP STYLE FOR GENERAL USE, BRUSH WHISK STYLE FOR TYPISTS (illustrated).

Refills, of course.



WELDON ROBERTS RUBBER CO.
Newark 7, N. J.

Not a mechanical gadget. Just unscrew the cap and move the eraser forward.

Tops for typing, accounting, drafting, executive, professional and student use.

Ask your stationer to show you WELDON ROBERTS 'JET' ERASERS. Look for — buy from — this Jet Display Card that you'll see in many stores.

IF YOU ARE NOT NOW RECEIVING A PERSONAL COPY OF PURCHASING EACH MONTH

You are missing in every issue of PURCHASING seven services that would cost hundreds of dollars if bought separately—

1. Washington Report for Purchasing Agents
2. Poll of Purchasing Opinion on Current Purchasing problems
3. Price, Production, Inventory Statistical Analysis that help you foretell price changes
4. Inventory (illustrated) of new products
5. Forms that lubricate purchasing department operation
6. Free catalog service
7. Purchasing Legal Service—interpretation of latest legal decisions affecting purchasing

Fortune favors the man well-informed in his own profession.

You can get the full benefit from the wealth of valuable information in PURCHASING by receiving it personally each month. Just fill in, clip, and mail this coupon.

PURCHASING, 205 E. 42nd St.
New York 17, N. Y.

So that I will receive PURCHASING without delay each month, and in order that I may keep and clip it, send it to me personally as noted below—\$4 for one year.

Mr.
Title
Company
Address

COMPRESSOR LOCKS CARDS IN FILE

New Development in steel storage file compressors, is announced by Diebold, Inc., Canton 2, Ohio. The new compressor, illustrated, installed in tabulating card storage files, positively locks cards in the file and keeps them free from



The compressor positively locks cards in file

wrinkling and warping. The compressor does not loosen when the file drawer is opened, closed or carried vertically. Known as the Safe T Stak compressor, it occupies little space in the drawer, and is easily and quickly removed from the drawer.

1 1 1

FACTORY CONTROL SYSTEM ELIMINATES KEY PUNCHING

Electronically recorded inventory of production, payroll data, etc., has been developed to increase the efficiency of factory controls by the A. Kimball Co., 307 West Broadway, New York, N. Y. The system makes use of electronic speed and automatic control, and assembles data previously dependent upon manually operated key punching. The company states that the system is the answer to many problems including production control, payroll control, inventory control, stores control, work in progress, shipments in transit, etc.

The first step is to issue punched tickets with fixed information such as production order number, operation number, bin number, etc. at the rate of 180 tickets per minute on the Kimball PM "75". Up to 30 lines of punch marking can be accomplished. The tickets are then used to flow with job or material. When operation has been completed, ticket is forwarded to punch card department where electronic scanner produces standard punched cards at rate of 100 per minute. Printed matter gives complete information about the system.

OFFICE VIGNETTES #10 OF A SERIES



**How to make a
smart
investment
in good men**



It's good business to keep your good executives happy. As the manpower shortage problem grows, it becomes vitally necessary to hang on to your best men. Like skilled workmen, your executives need the finest of tools to do their best work. We are giving our best men the best tools, thanks to the office furniture replacement plan the Security Steel representative worked out with us. We checked the field and we chose Security's CRESTLINE. Why not look into CRESTLINE Office Furniture . . . it's a smart investment for the years ahead.

Crest **LINE**

SECURITY STEEL EQUIPMENT CORP.

AVENEL, NEW JERSEY



CUSTOMER'S INVOICE

DATE
NAME
ADDRESS
CITY
STATE
ZIP

QUANTITY
UNIT PRICE
TOTAL

SHE BILLS

1. See instructions included with our notes.
2. Forward to nearest agent or our office with letter.
3. See your agent or our office for more information.
4. Your purchase is good only on the net amount of this notice.

Marginal Punched Business Machine Forms



Thousands or Millions....

**ALUMICAST can produce quality castings
in quantity, exactly to your specifications**

Let ALUMICAST give you a helping hand with your casting problems. You'll be agreeably surprised with the results if you ask our nationally recognized authorities in research, metallurgy, engineering and production to put their know-how to work for you.

Here at ALUMICAST, we have the most modern laboratory and production equipment to make permanent mold and die castings in aluminum or magnesium. Every step, from ingot to casting, is rigidly regulated. The quality of ALUMICAST castings is outstanding because

of expert scientific control. This value, we call "E.S.C.", is of great importance to you. It helps make good products better.

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AMONG THE Associations



"Industry Looks South" Theme of Seventh District Conference Held In Louisville

"Industry Looks South" will be the theme of the 8th annual Conference of the Purchasing Agents of the Southeast, District Seven, National Association of Purchasing Agents, to be held in the Peabody Hotel, Memphis, Tenn., October 8 and 9.

Announced program for the meeting is as follows:

Monday, October 8—Registration, followed by call to order by W. E. Rier, general chairman, purchasing agent Rotary Lift Company, and invocation. After an address of welcome to Memphis by Mayor Watkins Overton, Walter Joyce, president of the Memphis association will greet the delegates. T. A. Corcoran, purchasing agent, The Courier-Journal and Louisville Times, and former president of the N.A.P.A., will open the business session and introduce a panel discussion on the "Southeastern Business Outlook." Hoyt B. Pritchett, president of the Purchasing Agents' Association of Louisville will be moderator. Frank Ahlgren, editor of the Memphis Commercial Appeal, will speak on "Business in the South." John F. Skillman, Director of Inquiries, Controlled Materials Plan, is scheduled to discuss CMP, and answer question on it from the floor.

Monday afternoon's session will feature first the address of Chester F. Ogden, N.A.P.A. president. George Aljian, chairman of the national association's educational committee, and George Cole, education chairman for District Seven will conduct the Educational Hour. Following an address on "Industry Looks South" by Irwin Such, editor of "Steel", Gus Leep, chairman of the N.A.P.A. committee on lumber will discuss "Timber."

Guest speaker at the evening banquet will be Kenneth W. Haagenon, director of public relations, Allis-Chalmers Mfg. Co. Martin Sunderland will be master of ceremonies.

Tuesday, October 9—With O. L. Williamson, purchasing agent, Merrill-Stevens Co., Jacksonville, Fla., presiding, the morning session will open with the report of the district vice-president, Clyde Porter, purchasing agent, Alabama By-Products Corp., Birmingham, Ala. George Wilson, editor of the "Alabama Purchaser", will speak on "Public Relations." His talk will be followed by a report on district activities by Ed-

gar McCulley, of the Louisville Association. Final features of the program will be addresses by Arthur V. Weibel, president, Tennessee Coal, Iron and Railroad Company, and George Renard, executive-secretary of the National Association of Purchasing Agents.

P.A.A.R. MEETING HONORS TAYLOR CENTENNIAL

A regular meeting of the Purchasing Agents Association of Rochester was held on Wednesday night, September 19, at the Rochester Club. A special program was presented honoring the centennial of the Taylor Instrument Company. Taylor purchasing men Curt Hart and Matt Kuebel were in charge of the meeting.

LOS ANGELES ASSOCIATION NAMES COMMITTEE CHAIRMEN

Committee chairmen of the Purchasing Agents Association of Los Angeles for the coming year are as follows:

Grant Goodale, State of California, publication; Ray L. Galbraith, Bendix Aviation Corp., Pacific Divn., membership; Roy M. Fly, Western Gulf Oil Company, noon luncheon; Sam McFad-

den, County of Los Angeles, acquaintance and reception; Wallace B. Stanford, Phelps Dodge Copper Products Corp., public relations; Norwood D. Tichenor, Standard Oil Co. of California, oil company buyers; Ed. S. Thompson, San Diego Unified School District, governmental buyers; A. Leonard Ossian, The California Hospital, hospital-schools; J. L. Wells, Lockheed Aircraft Corporation, aircraft; Walter E. Puth, Prudential Insurance Company, educational; Irwin N. Seal, Mission Dry Corporation, badge; Philip Rypinski, Square D Company, attendance; C. L. Guthrie, A. M. Castle & Co., bowling; Wm. T. Reynolds, Los Angeles Transit Lines, national affairs; Frank D. Lortscher, Signal Oil & Gas Co., program.

TOLEDO ASSOCIATION OPENS NEW SEASON

The Toledo Purchasing Agents Association opened the new business season with a regular monthly meeting at the Toledo Yacht Club on September 20. The meeting was held after a chicken dinner, family style, and featured the showing of a film entitled "The Magic Box", presented through the courtesy of The Folding Paper Box Association of America.

A new twist in membership drives is the association's offer of a beautiful silk necktie to each member who furnishes the name of a prospective member. The tie is presented when the new member is enrolled.

N.A.P.A. DISTRICT COUNCIL MEETINGS

District No. 7—October 7

Peabody Hotel, Memphis, Tenn.—Clyde H. Porter, Vice. Pres.

District No. 6—October 11

Mayflower Hotel, Akron, O.—M. E. Carlisle Vice. Pres.

District No. 3—October 12

Brown Palace Hotel, Denver, Colo.—Thorvald S. Paulsen, Vice Pres.

District No. 9—October 17

Hotel Kimball, Springfield, Mass.—Laurence A. Fagan, Vice Pres.

District No. 5—October 18

Mount Royal Hotel, Montreal, Can.—B. Knox Sprung, Vice Pres.

District No. 2—November 14

Oklahoma Biltmore Hotel, Oklahoma City, Okla.—Charles F. Wilson, Vice Pres.

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tions, a battery does not require water more often than once in one or two weeks when it is in full cycle service.

Only water that is known to be suitable for storage batteries should be used. It should be pure and free from any contamination. Distilled water is recommended. Water should be kept in clean containers of glass, plastic or porcelain with cork, glass or rubber stoppers.

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TRI-STATE ASSOCIATION DISCUSSES CMP

A regular meeting of the Tri-State Purchasing Agents Association was held on September 18, at the Prichard Hotel, Huntington, W. Va. As a special feature, C. W. Massie, district manager, U. S. Department of Commerce, Charleston, W. Va. Office, was on hand to answer questions on the Controlled Materials Plan. A film entitled "Electrical Proving Ground" was shown through the courtesy of the Westinghouse Electric Corporation.

1 1 1

"TWO HEADS" BIG SUCCESS AT CHICAGO ASSN. MEETING

Presentation of the N.A.P.A.'s outstanding educational comedy, "Ever Wish You Had Two Heads" at a meeting of the Purchasing Agents Association of Chicago on September 13 was a big success. The show featured the original cast that had scored such a success at the national convention in New York in June. It included: Miss Catherine Keane, Messrs. Robert Doyle, Conrad Dreiske, Len Ansley, William Jackson, Ira B. Cross, Jr., Henry Kopp, Arthur Pearson, Earl Bolen, and two "sepulchral voices."

1 1 1

BUFFALO ASSOCIATION VISITS SOCONY PLANT

The Wednesday, September 12 meeting of the Purchasing Agents Association of Buffalo combined a plant visit, and a regular business session featuring a New York State official as guest speaker.

The afternoon portion of the program was devoted to a visit to the Buffalo plant of the Socony-Vacuum Oil Company. The tour included a trip to the thermo-cracking unit and a stop at the Babcock Street filling department and the asphalt filling department.

Cocktails and dinner followed at the Hotel Statler. Speaker of the evening session was E. G. H. Youngmann, of the New York State Thruway Authority. Mr. Youngmann discussed the huge operation and presented a 20-minute film entitled "Thruway to Tomorrow." A question and answer period followed.

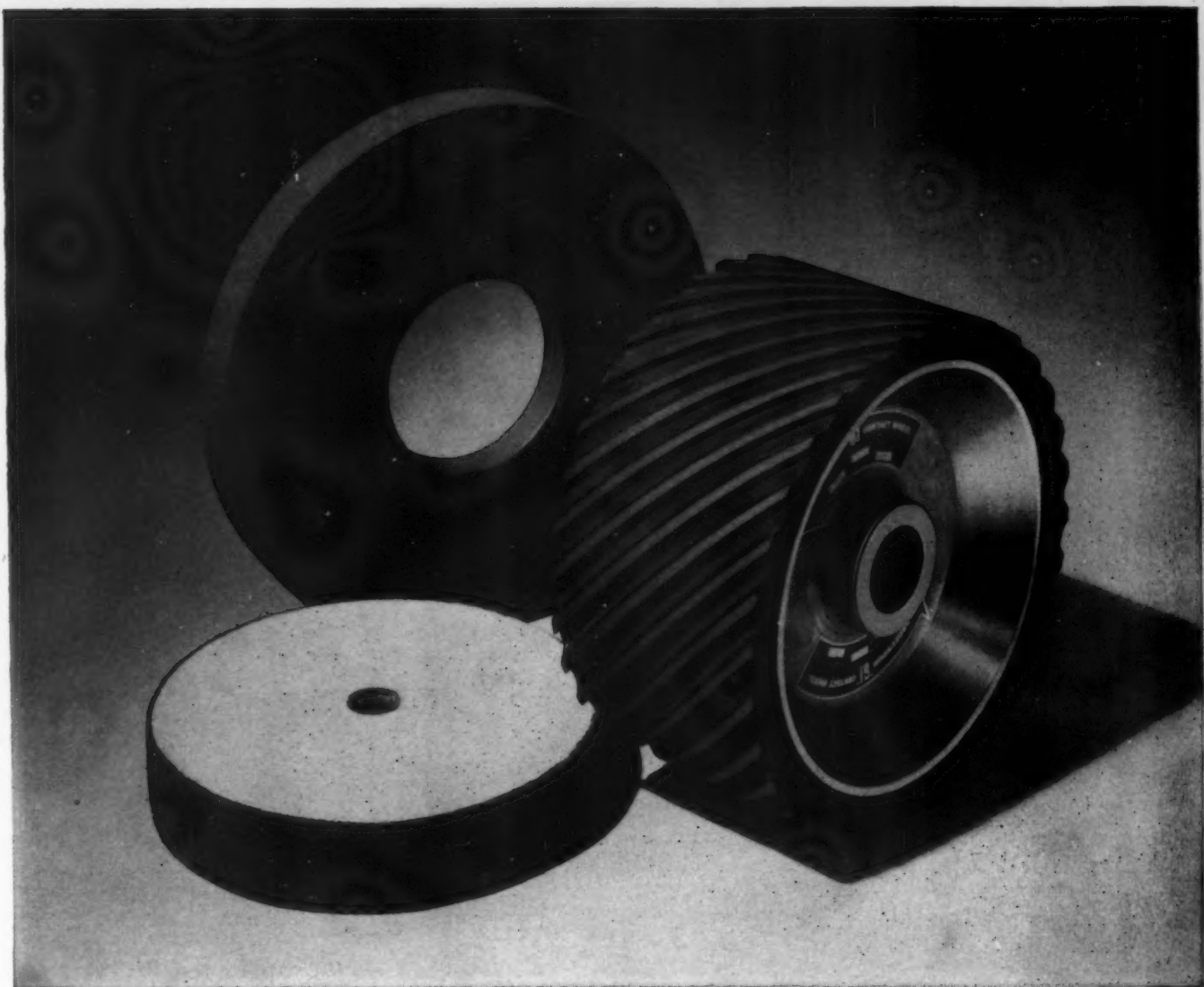
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ALICE ROWBOTHAM HEADS CHICAGO WOMEN'S GROUP

Alice Rowbotham, assistant purchasing agent of Verson Allsteel Press Company, recently took office as president of the Women's Division of the Purchasing Agents Association of Chicago.

The following new officers were elected to serve with her during the 1951-52 season: Miss Helen Hoffman, manager, promotion and purchasing departments, Chicago Motor Club, vice-president; Mrs. Edna Wisthoff, purchasing agent, R. Krasberg & Sons Mfg. Co., secretary; and Miss Florence Hayes, purchasing agent, Chicago Tool & Engineering Co., treasurer.

(Please turn to page 214)



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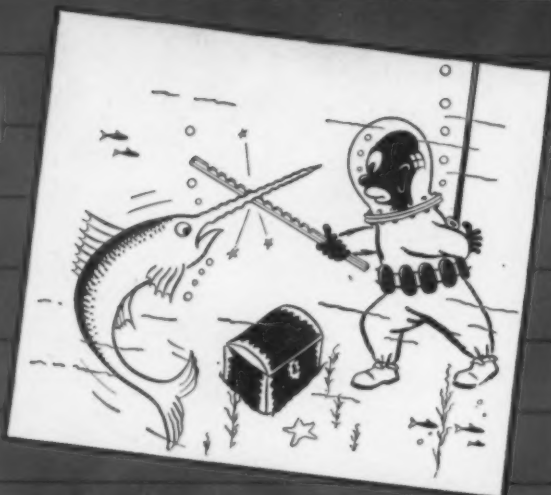
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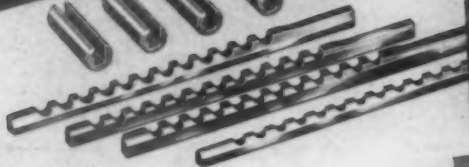
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OGDEN ADDRESSES CHATTANOOGA ASSN.

Chester F. Ogden, president of the National Association of Purchasing Agents was the principal speaker at a meeting of the Purchasing Agents Association of Chattanooga, held on August 14.

1 1 1

SOUTH BEND ASSOCIATION HAS GOLF AND DINNER PARTY

The fifth annual September golf and dinner party of the Purchasing Agents Association of South Bend was held on Tuesday, September 18. The affair, which took place at the Elkhart Elks Country Club, featured golf in the afternoon, and a buffet style dinner in the evening, followed by dancing until midnight.

1 1 1

"P.A.'S PROBLEMS UNDER CMP" TWIN CITY ASSN. TOPIC

The first meeting of the new season was held by the Twin City Association of Purchasing Agents at the Hotel Radisson, Minneapolis, on September 12. The pre-meeting huddle was highlighted by a lively discussion on "Do Purchasing Agents Have Problems Under CMP?" Vince Vinci was moderator.

Principal speaker at the meeting was James Q. Dupont of the E. I. duPont de Nemours Company, Wilmington, Del.

1 1 1

EASTERN N. Y. ASSN. HOLDS CLAMBAKE

The annual clambake of the Purchasing Agents Association of Eastern New York was held on Thursday, September 13, at Picard's Grove, New Salem, N. Y. Sports events, for which numerous prizes were awarded, occupied the afternoon portion of the program. The bake was served in the evening.

1 1 1

COMMERCE DEPT. OFFICIAL NEW ORLEANS ASSN. GUEST

A regular monthly dinner-meeting of the Purchasing Agents Association of New Orleans was held on Monday, September 10, at the St. Charles Hotel.

Wren Anderson, business specialist for the Department of Commerce, headed the program, which was devoted to "C.M.P. and its Ramifications." Mr. Anderson and members of his staff answered questions on the regulation. The association's economist, Robert Elsasser also gave a short talk.

1 1 1

WASHINGTON ASSOCIATION HAS ANNUAL SPOKANE TRIP

The annual Spokane trip of the Purchasing Agents Association of Washington was scheduled to take place on September 28 and 29. A full report on

(Please turn to page 218)



R_x

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ordered" . . . in BRASS . . .**

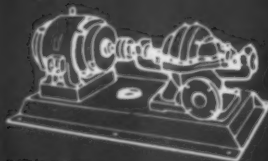
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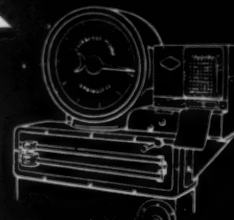


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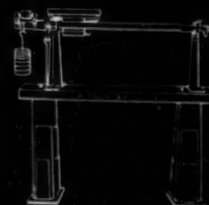
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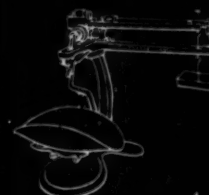
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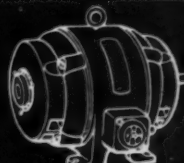
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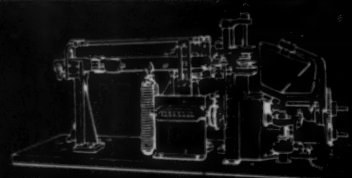
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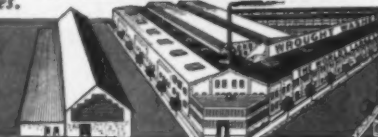
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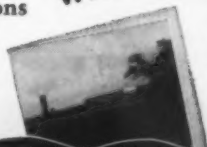
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KALAMAZOO LABEL COMPANY, Kalamazoo, Michigan

Exclusive Label Manufacturers Since 1906

(Continued from page 214)
the affair will be carried in the November issue.

First major attraction of the yearly event was the Annual Manufacturers' and Distributors' night meeting of the Spokane group on Friday, September 28. Second feature was the Washington State College-Santa Clara football game at Spokane Stadium on Saturday.

OGDEN GUEST AT GEORGIA ASSOCIATION MEETING

Chester F. Ogden, president of the National Association of Purchasing Agents, was the guest speaker at the first meeting of the Purchasing Agents Association of Georgia. The meeting was held at Brittain Hall, Georgia Tech, in Atlanta, on August 15.

POLICE OFFICIAL GUEST AT WASHINGTON MEETING

The first fall meeting of the Purchasing Agents Association of Washington was held on September 13, at the Olympic Hotel, Seattle, Wash.

Guest speaker was William Burnett, chief of civilian police, Puget Sound Navy Yard, Bremerton, Wash. Mr. Burnett, an authority on the narcotics problem, discussed its growth in this country and measures that must be used to combat it.

An educational meeting under the chairmanship of Burt Curtis was held in the afternoon, featuring a discussion on "Priorities." A. W. Mickelson, priority and C.M.P. director for the regional office of N.P.A. was the guest speaker.

"MICROWAVE MAGIC" TOPIC AT NEW YORK ASSN. MEETING

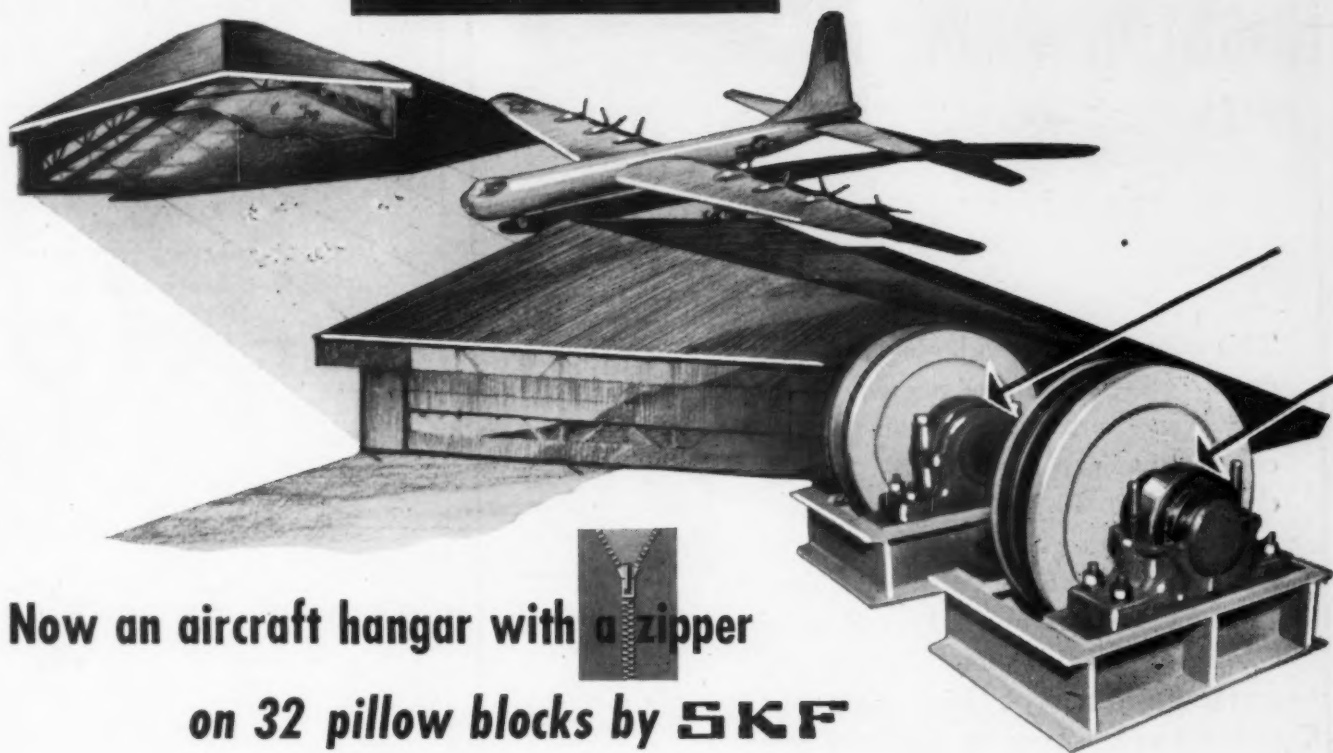
The opening fall meeting of the Purchasing Agents Association of New York was held on Tuesday evening, September 18 at the Builders' Exchange Club. Guest speaker was W. H. Britnell, service engineer for the New York Telephone Company, who gave a talk entitled "Microwave Magic." He explained the use of ultra short wave radio in relaying television programs from hilltop to hilltop across the continent.

At the regular forum, held in the afternoon, Albert Pleydell, former Commissioner of Purchase for New York City, and now head of Albert Pleydell Associates, spoke on "Should the P.A. Have an Expense Account?" Neil H. Reilly, Jr., presided.

EDUCATION DISCUSSED AT CENTRAL MICHIGAN ASSN.

A regular dinner meeting of the Purchasing Agents Association of Central Michigan was held in Lansing on September 18. Speakers were Russell K. Kleis, assistant professor of continuing education, and Dr. Stanley E. Bryan, associate professor of business administration, both of Michigan State College. (Please turn to page 220)

Strobel & Salzman, Engineers
Petroff & Clarkson, Architects



Now an aircraft hangar with a zipper on 32 pillow blocks by SKF

Here's the newest development in equipment for fast, time-saving, cost-cutting turnaround maintenance, inspection and emergency repairs for commercial aircraft. It's the Mitchell Mobilhangar, built in two parts. Taxi aircraft into position—push-button controlled motors close the equipment to provide all the facilities of a fully equipped hangar. The "Mobilhangar" has every facility for servicing aircraft of any size. Tracks for it can be laid easily anywhere. Opening and closing operations are made smooth and easy by means of trucks equipped with 32 SKF Spherical Roller Bearing Pillow Blocks—a wise choice based on confidence in SKF's ability always to help put the right bearing in the right place; a wise choice because, wherever and whenever these pillow blocks may need servicing or replacement, there's an SKF Distributor near who is thoroughly qualified to do the job and do it right.

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COMPANY _____
TITLE _____

(Continued from page 218)

They discussed purchasing courses at the college, extension activities, and evening courses available to members.

Membership in the Purchasing Agents Association of Central Michigan has been growing steadily and now stands at ninety-nine. Among the newer members are: Jim Clouse, Hermes Printing Company, Lansing; L. M. Henderson, Carrier Stevens Company, Lansing; Bernard J. Bettendorf, Handley-Brown Heater Co., Jackson; R. L. Hanby, Loneran Manufacturing Company, Albion; Charles W. Burns, Albion Industries, Inc., Albion; and Willis J. Myers, Owosso Coach Company, Owosso.

Meetings during the coming business year will feature a 5 to 10 minute talk on a specific commodity by some member of the association.

1 1 1

MIDGET SUBMARINE VETERAN MONTREAL ASSN. SPEAKER

A regular meeting of the Purchasing Agents Association of Montreal was held in the Mount Royal Hotel on Tuesday, September 18. Guest speaker was Eoin B. Ruthven, who commanded the first operational flotilla of midget submarines in the Royal Navy during World War II. His subject was "Service in Midget Submarines of the Royal Navy." Mr. Ruthven is now assistant office manager of Guardian Trust Company.

The Montreal association's latest bulletin carries a note on the formation of a new branch to be known as The Purchasing Agents Association of Eastern Ontario. Tom Browne of Aluminum Laboratories is the first chairman. The Montreal group will lose two of its older members, H. Van Dousen and Howard White, both of Brockville, who will become charter members. Fred Samis, Montreal's immediate past president will be the guest speaker at the October meeting of the new branch.

Among the new members of the Montreal Association are: W. J. Reilly, Canadian Celanese Limited; Charles J. Illick, Dennison Manufacturing Co. of Canada, Limited; Michael J. Cleary, Canada Iron Foundries Limited; William G. MacLaren, Canadair Limited; Robert J. McCormick, Sperry Gyroscope Co. of Canada Limited; Bernard T. MacDonald, Durham Industries (Canada) Limited; Rolands Harrison, Canadian General Electric Co. Limited.

1 1 1

SERIES OF ONE DAY CONFERENCES FOR PURCHASING MANAGERS

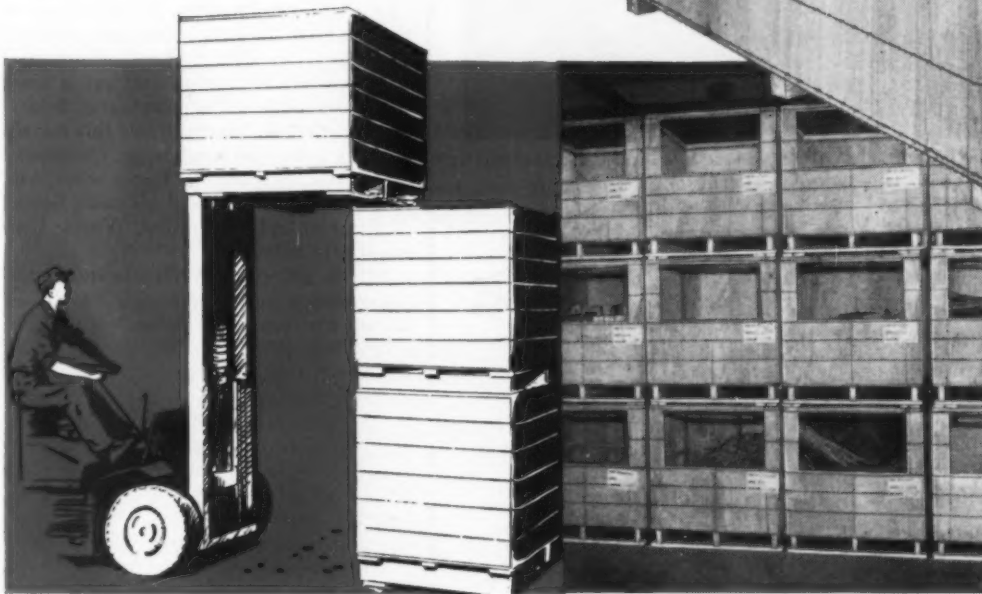
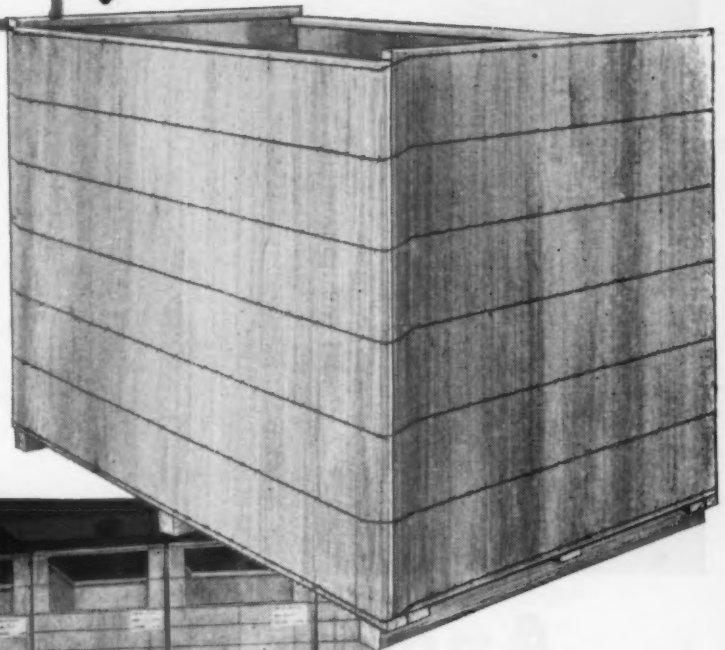
The Industrial Management Institute, University of Wisconsin, P. O. Box 2098, Madison 5, Wis., on September 25th commenced a series of six one-day conferences for purchasing managers, sponsored by The School of Commerce, The University Extension Division with the cooperation of The Wisconsin Manufacturers Association and the Milwaukee Association of Purchasing Agents.

(Please turn to page 222)

Generalift *pallet boxes*

provide...

**THE ANSWER TO
MATERIALS HANDLING
PROBLEMS...**



**...AND THE
ANSWER TO
STORAGE
PROBLEMS**

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FOR SMALL BUSINESS
FOR ALL BUSINESS!**

The Generalift Pallet Box is new... it has had a truly amazing acceptance among practically all types of manufacturers! It sharply reduces costs because *one* workman, fork-lift truck, and Generalift Pallet Box, do the work of many! If you are interested in sharply cutting your materials handling and storage costs, write today for complete information on this versatile container.

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This colorful booklet illustrates and describes the many advantages of the Generalift Pallet Box. We will be glad to mail upon request.



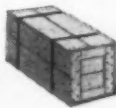
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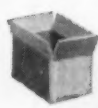
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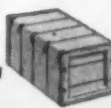
General
Nailed
Box



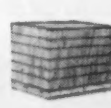
General
Corrugated
Box



General
Cleated
Corrugated
Container



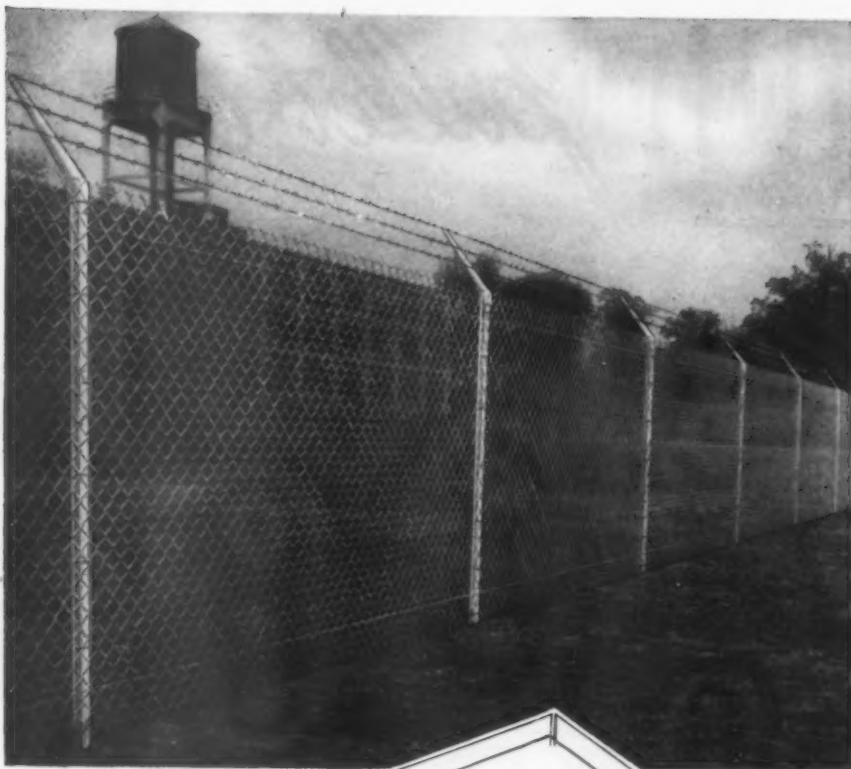
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Snoopers, Trespassers, Troublemakers**

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For full information on Anchor Fence—diagrams, fencing ideas, plans, photos of installations—send for Anchor's Industrial Fence Catalog. Or ask for an experienced Anchor engineer to call and help you solve your plant protection problems. Write to: **ANCHOR POST PRODUCTS, INC., Industrial Fence Div.,** 6615 Eastern Ave., Baltimore 24, Md.

Anchor Fence

Nation-wide Sales and Erecting Service

(Continued from page 220)

The Conference dates are as follows: No. 1, September 25; No. 2, October 23; No. 3, November 27; No. 4, March 25 1952; No. 5, April 22, and No. 6, May 27.

"The Purchasing Agents Responsibility for an Efficient and Economical Organization", was the September 25 subject, with Professor Howard T. Lewis, Harvard University Graduate School of Business Administration, Boston, as chairman.

October 23: "Purchasing Policies, The Basis of Sound Purchasing Practice"—(a) Establishment of departmental policies; (b) The need for flexible policies; (c) Coordination of functions essential to proper procurement of materials; (d) Review and maintenance. Conference leader, H. John Printz, Director of Purchases, Hotpoint, Inc., Milwaukee.

Human Relations in Purchasing

November 27: "Understanding People—The Core of Purchasing Efficiency"—(a) Understanding why people believe as they do; (b) How to utilize this motivating force in better purchasing; (c) Creating interest, enthusiasm and a sense of responsibility in the purchasing department; (d) The importance of this knowledge as a tool of purchasing. Conference leader, Dr. Edward T. Raney, chairman, Department of Personnel Methods, School of Business Administration, Wayne University, Detroit.

March 25, 1952: "Development and Maintenance of Sources of Supply—A Major Purchasing Function"—(a) Considerations involved in good vendor selection; (b) Analysis of your present methods and costs; (c) Use of research in supplier selection; (d) Selling the vendor on the desirability of having your company as a customer; (e) Vendor-vendee relations—a continuing responsibility. Conference leader, Harold A. Berry, manager of procurement, Ingersoll Products Divn., Borg-Warner Corp., Kalamazoo, Mich.

April 22, 1952: "Inventory Control as an Aid to the Purchasing Function"—(a) Interpreting the sales for casts; (b) Techniques of material and inventory control; (c) handling schedule and control problems; (d) Expediting and following up orders; (e) Use of forward buying and speculation. Conference leader, R. W. Sweeney, Production Control Manager, Kearney & Trecker Corp., Milwaukee, Wis.

May 27, 1952: "Legal Problems and Regulations Affecting Purchasing"—(a) current defense regulations; (b) Requirement contracts; (c) Price protection and escalator clauses; (d) price differentials under the Robinson-Patman Act; (4) purchase orders; (f) long-term contracts. (This conference will be devoted to current conditions with emphasis on specific problems of those in attendance). Conference leader, Mark S. Massell, partner, Bell, Boyd, Marshall & Lloyd, Chicago.

This series of six one-day conferences for Purchasing Managers is a part of the 1951-1952 program of the Industrial Management Institute. Each of the ses-

(Please turn to page 224)

HERE COMES HELP!

from your nearby Reynolds Aluminum distributor



Reynolds is putting forth every effort to ease your aluminum-buying problems. To meet the growing demand Reynolds Metals Company and other U. S. producers have already started on another vast expansion program which will greatly increase the country's aluminum production capacity.

To meet your immediate problems the nearby Reynolds distributor listed below is

doing his level best to fill orders from limited stocks.

You can also count on his assistance and guidance in selecting temporary alternate materials. He will apply all of his experience and energy to helping you out. Present your procurement problems to him. Now as always he will give you the kind of service you need and want.

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CALIFORNIA

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Los Angeles and San Francisco
Richard G. Stern & Co.,
Los Angeles
Toy-Holbrook, Inc.,
San Francisco
Union Hardware & Metal Co.,
Los Angeles
United States Steel Supply Co.,
Los Angeles and San Francisco
Western Metal Supply Company,
San Diego

COLORADO

Marsh Steel Corporation,
Colorado Springs and Denver

CONNECTICUT

American Steel & Alloys Corp.,
Hartford

FLORIDA

Horne-Wilson, Inc., Jacksonville,
Miami, Orlando and Tampa
Southern States Iron Roofing Co.,
Jacksonville and Orlando

GEORGIA

Southern States Iron Roofing Co.,
Albany, Atlanta and Savannah

ILLINOIS

J. G. Brown Co., (Architectural only)
Chicago
Silverstein & Pinsof Inc., (Ingots only)
Chicago
United States Steel Supply Co.,
Chicago

INDIANA

Hubbell Metals, Inc.,
Indianapolis
Benjamin Wolff & Co., Chicago

KENTUCKY

Southern States Iron Roofing Co.,
Louisville

LOUISIANA

Southern States Iron Roofing Co.,
New Orleans

MARYLAND

Clandon Bros., Inc., (Wire, rod, bar,
structural) Baltimore
Lyon, Conkile & Co., Inc., Baltimore
United States Steel Supply Co.,
Baltimore

MASSACHUSETTS

Bay State Refining Co., (Ingots only)
Chicopee Falls
Arthur C. Harvey Company, Boston
Pratt & Inman, (Wire, rod, bar,
structural) Worcester

MICHIGAN

Kasie Steel Corporation, Detroit
McDonnell Bros., (Architectural only)
Detroit
Milton A. Moler Co., (Ingots only)
Detroit

MINNESOTA

United States Steel Supply Co.,
St. Paul
Vincent Brass & Copper Co.,
Minneapolis (Wire, rod, bar only)

MISSISSIPPI

Southern States Iron Roofing Co.,
Natchezburg

MISSOURI

Hubbell Metals, Inc.,
Kansas City and St. Paul
Marsh Steel Corporation,
N. Kansas City

NEW JERSEY

Edgcomb Steel Corporation, Hillside

NEW YORK

J. G. Brown Co., (Architectural only)
New York
Edgcomb Steel Corporation,
Hillside, N. J.
Rochester Smelting & Refining Co.,
(Ingots only) Rochester

NORTH CAROLINA

Southern States Iron Roofing Co.,
Raleigh

OHIO

The Atlas Metal Co., (Ingots only)
Cleveland
Hamilton Steel Corporation, Cleveland
Mutual Manufacturing & Supply Co.,
Cincinnati

OREGON

Woodbury & Company,
Portland

PENNSYLVANIA

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Merchant & Evans Co., Philadelphia
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Southern States Iron Roofing Co.,
Columbia

TENNESSEE

Southern States Iron Roofing Co.,
Nashville and Memphis

TEXAS

Moncrief-Lenoir Mfg. Co.,
Dallas, Ft. Worth, Harlingen,
Houston, Lubbock, San Antonio,
and Temple

UTAH

Salt Lake Hardware Co., Salt Lake City

VIRGINIA

Southern States Iron Roofing Co.,
Richmond

WASHINGTON

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WISCONSIN

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(Continued from page 222)

sions, as will be noted, covers a major phase of the purchasing function. The meetings are designed to provide a condensed but comprehensive analysis of the subjects discussed. Meetings will be held in the Loraine Hotel, Madison, Wis.

Bulletins and further information about this and other conference series, are available from the Industrial Management Institute.

LIST 1400 EDUCATIONAL TRAINING AND RECREATIONAL FILMS

The 40th anniversary issue of Associated Films' catalog of 16mm sound films and filmstrips—"Selected Motion Pictures"—has been published and is available free to industrial plants, stores and offices. The 60-page illustrated publication describes more than 1,400 different educational, recreational, and training films.

Of special interest to personnel and recreation directors are the sponsored films, available for plant showings at no charge except transportation. These outstanding subjects, many in full color, are recommended for employee recreation programs and for lunch-hour showings. There is a wide selection of films on: travel, history, home economics, science and manufacturing, health and safety, and transportation.

There is a special section in the catalog devoted to civil defense films. The subjects described explain, simply and graphically, practical defenses against the A-bomb before, during and after enemy attack. They are available for purchase or rental.

In the entertainment category are many films to enliven "Movie Days" and recreational programs: sport reels, features, cartoons, comedies, the March of Time, westerns, serials and novelties. Special series rates may be had on most of these subjects.

Branches of Association Films are located in: New York, 35 W. 45th St.; Chicago, 79 E. Adams St.; San Francisco, 351 Turk St.; and Dallas, 1915 Live Oak St.

QUANTOMETER GIVES QUICK ANALYSIS OF BRASS AND BRONZE ALLOYS

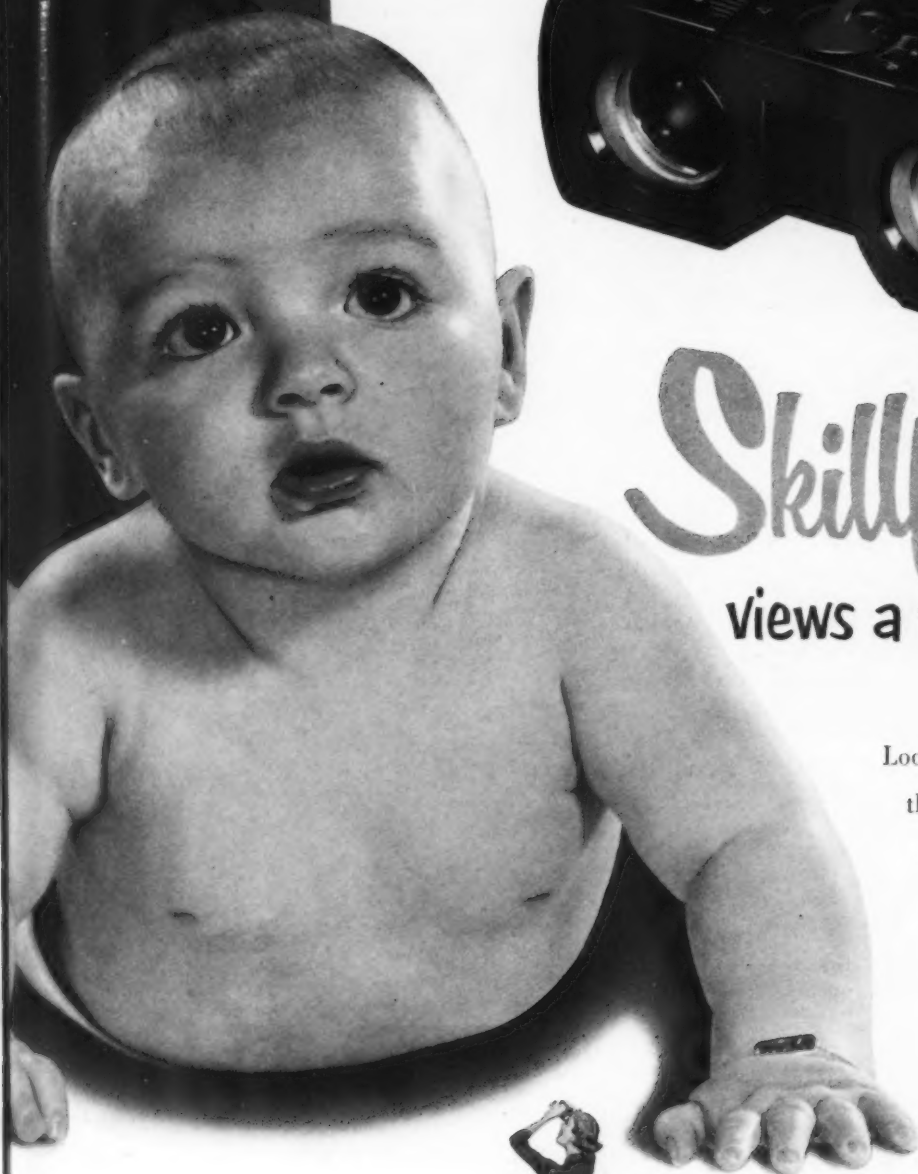
The "Quantometer", a direct reading spectrometer capable of automatically giving complete and accurate analysis of brass and bronze alloys in a few minutes, is featured in booklet "Control the Key to Improvement in Quality Products", just published by the Titan Metal Manufacturing Co., Bellefonte, Pa. Titan is said to be the first brass mill to adapt and install the Quantometer for production control both in the selection of raw materials and for the fabrication of brass and bronze alloys. As many as eight elements present even in minute quantities of only .002% can be analyzed accurately in two minutes, it is claimed. The new equipment replaces chemical methods of analysis previously used.

*Verascope Stereo Viewer
Molded for
Busch Camera Corp.,
Chicago*



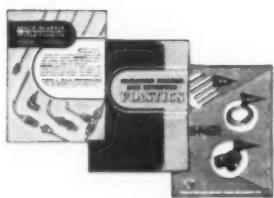
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Look at this viewer and you will see much more than a skillfully molded housing for a superb stereo optics system. You will see another reason why we are especially well equipped to mold your camera and photographic products—or any thermoplastic products for that matter. We can tell you a long story of product molding and engineering accomplishments. There's plenty of variety in this story for we have molded low cost mass production items, as well as outstanding sellers in the luxury price class.

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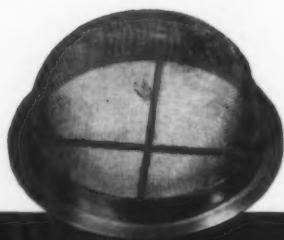
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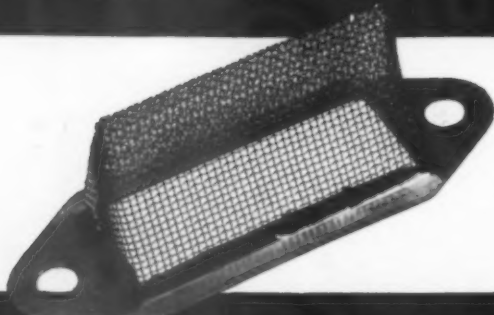
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This fabricated parts division of our business has grown by leaps and bounds. We have had many repeat orders. It could be due to the quality of wire cloth used and the care with which this cloth is assembled into the parts being fabricated.

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INDUSTRY DEVELOPS NEW METHOD TO CONSERVE SCARCE MATERIALS

American industry is conserving scarce and critical materials by developing new manufacturing techniques and using practicable substitutes, NPA has announced.

In citing examples of how industry is cooperating with the Government's conservation program, NPA pointed to an Ohio refrigerator manufacturer who saves nearly 12,000 pounds of steel in every 1,000 refrigerators by using plastic crispers and storage bins, formerly made of stainless steel.

Porcelain and Plastics Used

The same firm saves another 1,600 pound of steel per 1,000 units by using porcelain enamelled steel instead of stainless steel in defrost pans.

Another refrigerator manufacturer conserves 2,500 pounds of steel in every 1,000 deep-freeze units by using reinforced plastic liners instead of porcelain steel liners. The same manufacturer is saving 10,000 pounds of scarce copper per 1,000 freezers by using steel tubing in place of conventional copper tubing.

A Michigan electric range manufacturer has reduced his copper requirements 5 percent on stoves by re-routing the wiring.

80 Substitutions Made

A Pennsylvania refrigerator maker estimates he conserved 445,000 pounds of aluminum, 61,000 pounds of copper, 204,000 pounds of zinc and 17,000,000 pounds of steel in the first six months of 1950. The manufacturer was able to do this by using 80 alternate materials in manufacturing processes.

The communications industry is saving vast quantities of copper, steel, and nickel by employing new theories and techniques.

One major telephone system reports it is saving 1,000,000 pounds of aluminum, 10 million pounds of copper, and 500,000 pounds of both tin and nickel annually through conservation methods.

New Techniques Developed

Piano manufacturers have collected and sold 163,000 pounds of scrap iron and steel, and saved more than 205,000 pounds of cast iron, by redesigning plates before sending them to foundries, they report.

The medium and low-priced jewelry industry estimates that by doubling its use of aluminum it can get along on one-tenth the amount of copper and steel it used last year. This will represent a saving of 11,000 tons of copper and 900 tons of steel annually.

One tin can manufacturer has reported developing a completely "tinless" tin can.

In the face of critical shortages, U.S. industries are using inventiveness and ingenuity to keep the national economy on a high level, NPA concludes.

SEE CLASSIFIED
SECTION
PAGE 384

The Mark



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SAFETY!

The Man



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"Everything for Mine and Industrial Safety"

Over 2,600 items of proved equipment, developed through the ever continuing Program in the M.S.A. Research Laboratory, are ready and waiting to help you combat the diversified hazards of today . . . and tomorrow. And this list is constantly growing.

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edge, gained through years of experience and study, is at your service. And you'll find this service waiting for you in most of the key cities throughout the United States and Canada. Call the M.S.A. man on your every safety problem . . . his job is to help you.

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wear per pair

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extremely flexible
and
comfortable

Bol Tan

leather insoles
are sweat
resistant

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Bol Tan
insoles
stay soft
and
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life of
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not curl, crack or dry
out because of
perspiration

Now, at no extra cost you can provide your workers with longer lasting safety shoes... Hy-Test Safety Shoes with Bol Tan leather insoles.

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No. 3 . . . on CLEVELAND CLEVE-
 LITE* and COSMALITE* Laminated
 PHENOLIC TUBING. Gives endless
 uses in Electronic and Electrical Manufac-
 ing fields . . . a grade for every need.

For money-saving facts and
 time-saving data . . .

**SEND for these three FOLDERS
 today!**

*Trade Marks

The CLEVELAND CONTAINER Co.

6201 BARBERTON AVE. CLEVELAND 2, OHIO

• All-Fibre Cans • Combination Metal and Paper Cans
 • Spirally Wound Tubes and Cores for all Purposes

PLANTS AND SALES OFFICES: Cleveland, Detroit, Chicago, Plymouth, Wisc.,
 Jamesburg, N. J., Ogdensburg, N. Y. • ABRASIVE DIVISION at Cleveland
 SALES OFFICES: Grand Central Terminal Bldg., New York City; Washington
 Gas Light Bldg., Washington, D. C.; West Hartford, Conn.; Rochester, N. Y.
 Cleveland Container Canada, Ltd., Prescott, Ontario • Offices in Toronto and Montreal

COLUMBIA UNIVERSITY STARTS PACKAGE ENGINEERING COURSE

A course of fifteen lectures on Package Engineering was inaugurated Wednesday evening, September 26, by the Department of Industrial Engineering, Columbia University, New York 27, N. Y., subsequent lectures to be given on Wednesday evenings thereafter for the period of the course.

Presenting packaging and packing techniques from an engineering viewpoint exclusively, the lectures are being given by the following well known packaging authorities, under the supervision of Prof. Frederick C. Winter:

Robert G. Anderson, Sperry Gyroscope Corp., Lake Success, N. Y.; Walter J. Byrd, Standard Brands, Inc., New York City; C. T. Cakeley, National Wooden Box Association, Washington, D. C.; Frank Cohen, New York Ordnance District, New York City; Major Frank W. Green, Springfield Ordnance District, Springfield, Mass.; Victor L. Hall, secretary, Glass Container Manufacturers Institute, New York City; Glenn Mather, secretary, Fibre Drum Manufacturers Association, New York City; Paul H. Paulsen, Wm. H. McGee & Co., Inc., New York City; R. C. Reed, The Texas Company, New York City; C. E. Sifton, Can Manufacturers Institute, New York City; and, Earl R. Stivers, Wirebound Box Association, Rockaway, New Jersey.

Tuition for the course which is known as I E 247, is \$40.00. The course is open to the general public as well as to students earning credits for a bachelors or masters degree.

1 1 1

ACHIEVEMENT MARKS ANNUAL REPORT OF CITY OF CHICAGO PURCHASING DEPARTMENT

Featuring a noteworthy program of achievement for the year 1950, the annual report of the Department of Purchases, Contracts and Supplies for the City of Chicago, issued by John F. Ward, purchasing agent, reveals the notable progress that has been made in the development of the department, since it was organized following the passage of the Municipal Purchasing Act by the Illinois legislature in 1947.

Dealing particularly with the savings and accomplishments of the department for the year 1950, the report states that the authorized appropriation for the department was \$811,568.00, from which the department expended \$733,561.17, marking a saving of 9.6% of the amount appropriated.

This saving of 9.6% is substantial. But in addition, the report points out that the department has evidence of savings totaling \$812,000.00 annually, some examples of which are shown in the report. This sum is greater than the departmental appropriation.

The department has capitalized on the consolidation of city needs, paving the way for substantial quantity discounts,

(Please turn to page 234)

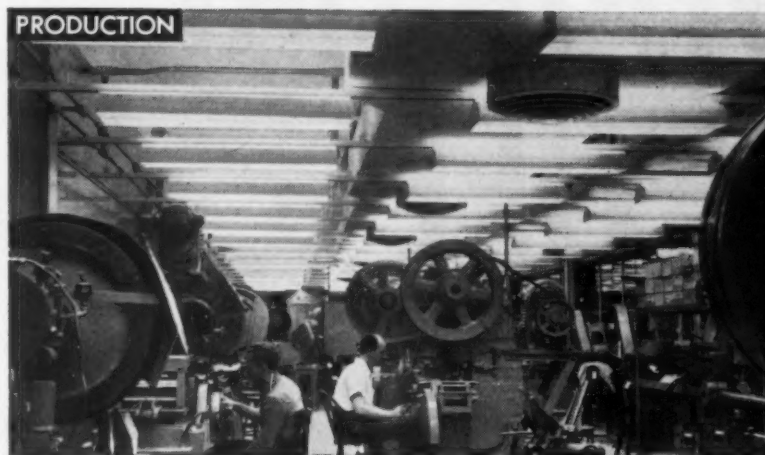
*The costliest place
to catch mistakes
is here→*

Best-lighted area in most plants today is the inspection table. But good inspection lighting can only help catch errors *after* they occur—and time and materials have already been wasted.



*The cheapest place
is here→*

By giving your production workers as good light as you give your inspectors, you prevent mistakes from happening. There are fewer errors, less fatigue, fewer accidents.



Photos courtesy Metals & Controls Corp., Attleboro, Mass.

THE BEST WAY IS WITH "5-WAY IMPROVED" G-E FLUORESCENT LAMPS IN YOUR FIXTURES!

As a result of recent improvements made by General Electric lamp research scientists, you now get:

- (1) Increased efficiency (improved phosphor)
- (2) Better uniformity (improved processes)
- (3) Less end blackening (purer materials, more accurate controls)
- (4) Longer life (new materials and methods)
- (5) Better color rendition (new Deluxe White lamps show colors as they really are)

Workers see better, work better under cool fluorescent light with less glare, fewer shadows. Newest form of fluorescent is G-E slimline—up to 8' long, single pin base, instant starting. Call your General Electric lamp supplier.



FREE BOOKLET! How to light up for better production. For your copy of "Planned Lighting for Industry," write General Electric, Department 166-P-10, Nela Park, Cleveland 12, Ohio.

You can put your confidence in

GENERAL  ELECTRIC

We may KNOCK YOUR HAT OFF

with our Quote on
SAVINGS AND DELIVERY



If you're a Big User of Tiny Parts Such as These!



Sound like exaggeration? Not when you know that the electronic tube industry looks to The Bead Chain Mfg. Co. for its millions of radio tube pins. Or, that the economy-minded builders of electrical apparatus turn to us for the contact pins, terminals, jacks and sleeves required in tremendous quantities.

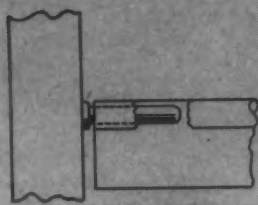
For pin-like parts, and variations of bushings needed for *mechanical* purposes, as well, we are the money-saving supplier to scores of famous

makers of products like toys, business machines, appliances, ventilators.

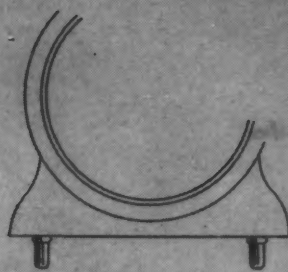
You save . . . if we can make it! We can almost say with certainty that if we can make that part (*up to 1/4" dia. and to 1 1/2" length*) you use in large quantities, we can show you a big saving. And, assure on-time deliveries to meet your defense work schedules! We have something unique back of that claim . . .



Low Cost Way to Get Parts for Many Mechanical Uses



PIVOT PIN
for vent, louver
fulcrums, hinges

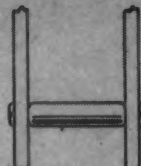
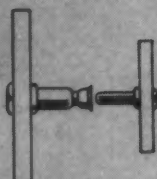


FOOT or REST PIN
for appliances,
novelties

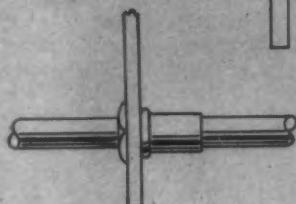


SPRING ANCHOR
for light
tension springs

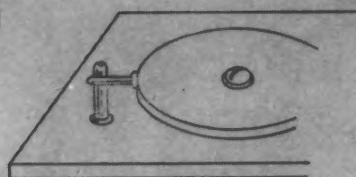
FRICTION FASTENER
for parts like
cover plates



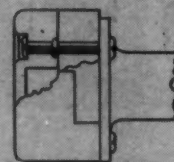
SPACER
for fixed or
moving parts



SHAFT BEARING
for light duty
in toys, etc.



STOP PIN
for limiting movement



SHOULDER PIN
for permanent attachments

Nobody has What We Have! To be able to produce our famous Bead Chain to sell for pennies per yard, we had to develop *our own* equipment and method . . . our *Multi-Swage Method*.

Instead of turning and drilling parts from solid rod, or stamping and forming them, our Multi-Swage Method automatically swages them from flat stock into precision tubular forms, with tight seams. By increasing the production rate many times and eliminating scrap, this saves a large part of the cost by other methods.

What We Can Make. Parts may be beaded, grooved, shouldered, and of most any metal. Generally, should not exceed 1/4" dia. or 1 1/2" length. Catalog

shows many *Standard Items* available in small quantity. *Special Designs* must usually be ordered in lots of a half-million or more, unless they are frequently reordered.

Get Cost Comparison. Send blueprint or sample and quantity requirements. Our engineers will return an eye-opener on economy.

Let **BEAD CHAIN** make it
by the

MULTI-SWAGE METHOD

B[®]

**BEAD CHAIN[®] — Kinkless
Chain of a Thousand Uses**

Used in countless ways to add convenience, and sales features to products . . . at negligible cost. Always the finest pull chain and parts retainer. Bead Chain offers widest choice of bead sizes and shapes, metals, colors, attachments and fittings, and experienced application aid.

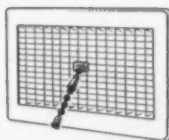
Novelties



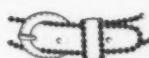
Retainer



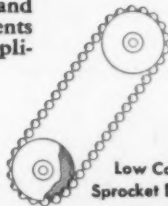
Pull Chain



Leather Trim



Low Cost
Sprocket Drive



**I want this
Catalog — Data Folder**

**The Bead Chain Manufacturing Co.
129 Mountain Grove St.,
Bridgeport, Conn.**

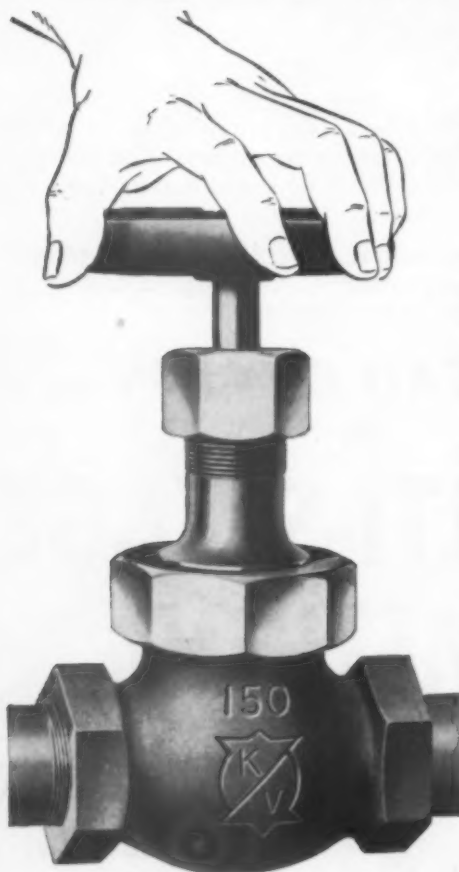
Name, title.....
Company.....
Address.....

KENNEDY

bronze
globe
valves...

JOB-FITTED

for longer service, easier maintenance



KENNEDY Fig. 89, Bronze Globe Valve
150 lbs. steam, 300 lbs. WOG, non-shock



Write for Circular 101—Buy from Your Local Distributor

THE **KENNEDY**
VALVE MFG. CO. • ELMIRA, N.Y.

VALVES • PIPE FITTINGS • FIRE HYDRANTS



SLIP-ON DISC HOLDER—
This unique disc holder locks on securely with stem in wide-open position... yet releases by a half-turn of the stem when bonnet assembly is removed.

YOU KEEP MAINTENANCE COSTS DOWN with KENNEDY Bronze Valves because they are *job-fitted*—every valve specially designed and engineered for the job it has to do.

THE KENNEDY FIG. 89, for example, is designed for services where frequent inspection, cleaning of internal parts and quick renewal of the composition disc are required.

HEAVY UNION BONNET RING permits easy dismantling and reassembly of the valve without risk of damage to body-bonnet bearing surfaces.

RENEWABLE COMPOSITION DISCS are available in a variety of materials to meet a wide range of fluid, pressure and temperature requirements.

RUGGED BODY has an unusually high seat to prolong disc life by utilizing full thickness of disc before disc-holder strikes the base of the raised seat.

LONG-WEARING PACKING—molded rings of lubricated asbestos—maintains easy operation and tight seal to prevent leaks. Valve can be re-packed under pressure.

FOR BEST RESULTS and real economy, standardize on KENNEDY Bronze Valves... and the complete line of KENNEDY Iron Valves, Malleable, Cast-Iron and Bronze Pipe Fittings.

(Continued from page 230)

and by incorporating the accounting and vouchering procedures in the purchasing department, cash discounts have been obtained that were heretofore unknown in City of Chicago business. During the year \$67,744.89 was recovered in cash discounts.

Through the inauguration of a perpetual inventory system, inventories have been materially reduced with corresponding reduction in capital investment and interest, along with closer and effective controls.

Efficient quality control has been developed within the department by means of a Testing and Inspection Division which conducted 9,582 laboratory tests and inspected materials and equipment valued at \$9,638,318.19.

A uniform policy of procurement is now established, along with standard types of documents, specifications, contracts and performance bonds. And of especial interest is the statement that "Procurement now has a voice in the Mayor's cabinet to reflect and assist in formulating inter-department and city-wide policy on purchasing matters."

The total procurement for the year 1950 totalled \$35,043,861, of which \$29,607,624. represents the activities of the Contract Division which handles any procurement over \$2,500. The Purchase Order Division, which is responsible for orders under \$2500., issued 41,948 purchase orders for a purchased volume of \$5,436,237.29. Salvage sales during the year amounted to \$144,068.24.

1 1 1

AD COUNCIL LAUNCHES VITAL STEEL SCRAP CAMPAIGN IN BUSINESS PAPERS

Faced with the need of channelling 32½ million tons of steel scrap to the mills this year to insure full production of vital steel, the Advertising Council is sponsoring another steel scrap campaign via James Thomas Chirurg Company, New York and Boston. The campaign will break this month.

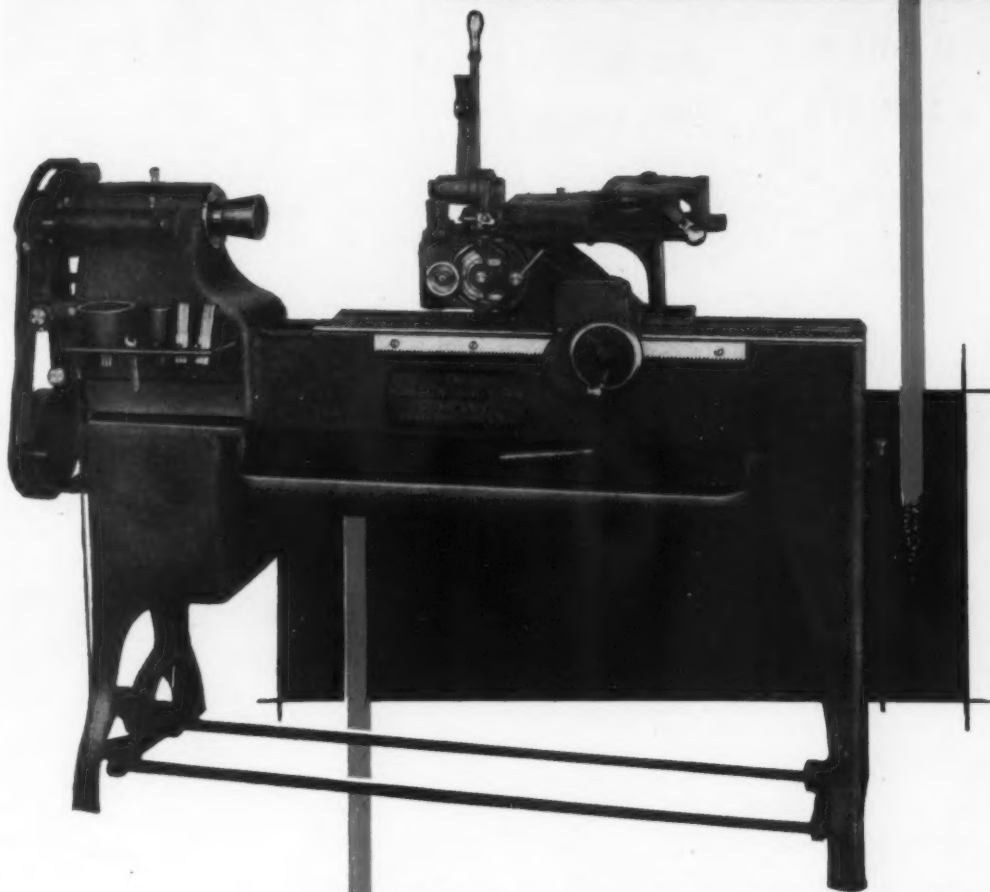
In 1949, the Council and the Chirurg Agency teamed up to help get 1,000,000 tons of steel scrap to the mills in a short 3 months. This new campaign is a long-term effort designed to tie in with Charles E. Wilson's plans for 1951 and 1952 steel production.

The importance of the campaign was stressed in a special letter to The Council from Charles E. Wilson, Director of the Office of Defense Mobilization, which estimated that "32,500,000 gross tons of purchased scrap will be required this year, an increase of 3,000,000 tons over 1950." Mr. Wilson stated that the requirements for industrial scrap steel in 1952 will be even greater.

Howard G. Sawyer, Chirurg Vice President in charge of Plans and Marketing, has been named supervisor of all campaign advertising materials. Robert D. Mossman, manager of advertising of Jones & Laughlin Steel Corporation, is coordinator of the campaign.

(Please turn to page 236)

Hanson-Whitney Rapid Precision Centering Machine



**a machine
you can use!**

**a price
you can pay!**

**delivery
you'll like!**

Here's the machine that precision centers almost any part with a machined finish — round, square, ball-ended, tapered — up to $3\frac{1}{4}$ " diameter. A variety of parts machined from the bar on automatics or semi-automatics can thus be centered quickly, accurately for subsequent grinding, milling, or special threading operations.

Centers are first drilled and then shaved, on one side only, to insure absolute accuracy, an operating feature that reduces the amount of stock allowed for finishing operations. A simple treadle arrangement leaves operator's hands free for speedy work handling.

This efficiently designed machine costs little, delivers the work fast. A note on your company letterhead brings an 8-page detailed bulletin by return mail.

HANSON-WHITNEY COMPANY • HARTFORD 2, CONN. • DIVISION OF THE WHITNEY CHAIN COMPANY

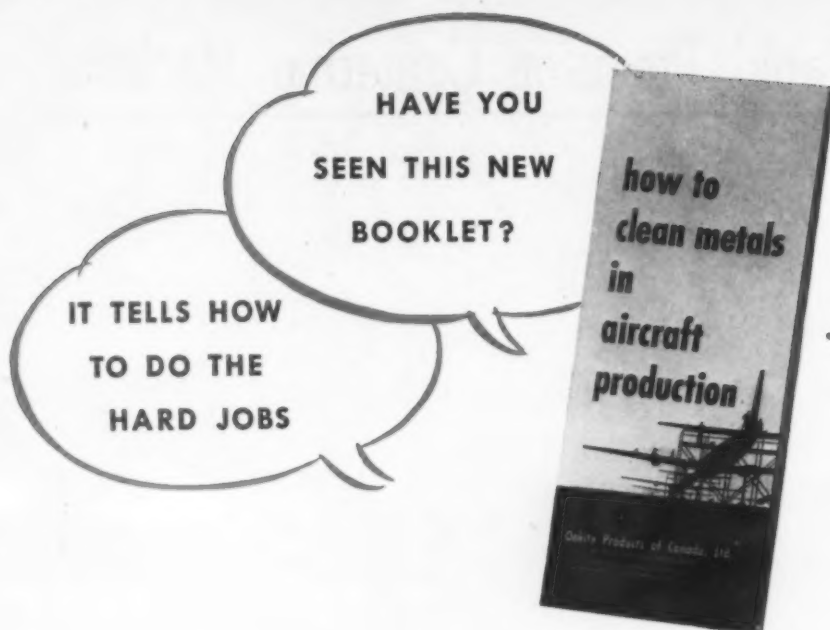


7/10/51

OCTOBER, 1951

Please mention PURCHASING Magazine when writing to advertisers.

235



Job-designed cleaning cuts costs in aircraft production. This 48-page illustrated booklet outlines all the big cleaning jobs. Have you seen the latest Oakite recommendations on

- Q How to clean aluminum in preparation for anodizing? *See page 4.*
- Q How to prepare aluminum for spot welding? *See page 10.*
- Q How to remove welding flux? *See page 14.*
- Q How to prepare aluminum for painting? *See page 15.*
- Q How to clean aluminum before and after heat treating? *See page 20.*
- Q How to strip paint from aluminum? *See page 22.*
- Q How to clean magnesium? *See page 27.*
- Q How to select and install cleaning tanks, rinse tanks and spray-washing machines? *See pages 31 to 35.*
- Q How to treat water in paint spray booths? *See page 36.*
- Q How to clean engine test cells? *See page 40.*

FREE Ask your local Oakite Technical Service Representative for your copy of Oakite's aviation booklet. Or mail coupon below.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
TRADE MARK REG. U.S. PAT. OFF.
 MATERIALS • METHODS • SERVICE

OAKITE PRODUCTS, INC.
 54 Thames St., New York 6, N. Y.

Send me a FREE copy of your booklet "How to Clean Metals in Aircraft Production."

Name _____

Company _____

Address _____

Technical Service Representatives in Principal Cities of U. S. & Canada

(Continued from page 234)

The current campaign is being undertaken at the request of the Committee on Iron and Steel Scrap of the American Iron and Steel Institute, and the National Production Authority. Geared to meet the iron and steel industry's urgent requirements in the current mobilization crisis for worn out and obsolete industrial and farm equipment, the campaign will be advanced principally through the space contributions of business and farm papers. Some steel companies already are promoting scrap salvage through their regularly scheduled business paper advertising, and henceforth an increasing number of companies are expected to do so.

FINGERTIP REFERENCE FILE OF CORRUGATED MATERIALS

Buyers of corrugated can now predetermine the right material for every job. The ChippaKit, offered by Chippewa Paper Products Co., Inc., 2425 S. Rockwell St., Chicago, Ill., is a fingertip



reference file of corrugated materials. More compact than most reference books—8½" x 3¾" x 5½"—it carries a complete line of samples of Chippaflex flexible corrugated and Chippewa single-faced corrugated. Each sample is individually labeled as to weight, grade, etc. Actual shipments do not deviate from sample standards.

NPA APPEALS BOARD TO CONSIDER ALLOTMENTS, ALLOCATIONS

Manufacturers who use steel, copper, aluminum or any scarce material under NPA allocation may now appeal denials of their applications for adjustment of CMP allotments and materials allocations, the National Production Authority announces.

In an amendment to NPA Regulation 5, which set up a three-man board in April to hear appeals from denials for adjustment or exception from provisions of its orders and regulations, NPA specifically authorized the Appeals Board to act also on cases involving CMP allotments and materials allocations.

NPA emphasized that any relief granted by the Appeal Board will be only "to the extent permitted by the availability of materials."

NPA's appeals procedure works in this manner:

(Please turn to page 238)



NEW P-K Bulletin
tells how to
add more speed
to the faster
fastening method

POWER DRIVING

of P-K Self-tapping Screws



This automatic, double spindle, hopper-fed machine is being used for driving two P-K Type U Hardened Metallic Drive Screws simultaneously in a plastic wiring device.



Describes and illustrates the various basic types of electric, air-operated and impact tools, as well as the automatic hopper-fed machines for screw driving in common use. Helps you determine which type is best for your assemblies. Also includes useful information on proper bit and socket selection. Free on request.

To meet America's colossal production requirements . . . for defense, for civilian goods . . . even more speed is needed in operations that have already set time-saving records.

Fitting right into this urgent need for *more speed, more efficiency*—in assembly operations—is the ever-wider use of Power Driving devices with P-K Screws.

A wide range of Power Driving equipment is available for use with the various types of P-K fasteners—and with slotted, Phillips recessed, and hex head styles. And all types have this in common—a substantial reduction in assembly time and cost.

Parker-Kalon does not manufacture power-driving equipment, but has tested many devices in the P-K laboratory under production line conditions, and found them suitable for use with P-K Screws. The information contained in the "Power Driving" Bulletin is based on reports of these many tests.

For specific information on power driving applied to your assemblies, talk to a P-K Assembly Engineer. Your P-K Distributor will furnish a copy of the Power Driving Bulletin . . . ask for Form No. 401. Or write: Parker-Kalon Corporation, 200 Varick St., New York 14.



The Original
PARKER-KALON[®] SELF-TAPPING SCREWS

A TYPE AND SIZE FOR EVERY METAL AND PLASTIC ASSEMBLY

Just how efficient
and economical
is your present
floor absorbent?



You can easily find out
with this portable laboratory

Seeing is believing! See how your present floor absorbent compares with others! Ask an Eagle-Picher representative to show you—right in your plant. See how Eagle-Picher Floor Dry actually gives **more coverage, more absorption per dollar!**

Eagle-Picher Floor Dry is chemically inert, noncombustible, insoluble. Its light weight provides highest coverage. Its light color brightens working areas, adds to plant safety.

**EAGLE-PICHER INDUSTRIAL
FLOOR DRY No. 85**

Since 1843
THE EAGLE-PICHER COMPANY
General Offices: Cincinnati (1), Ohio

The Eagle-Picher Company
Dept. P-1051, Cincinnati (1), Ohio
Gentlemen: Please send me more
information about Eagle-Picher In-
dustrial Floor Dry No. 85.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____



(Continued from page 236)

When a manufacturer believes that a provision of an NPA order, a CMP allotment or a materials allocation creates an unreasonable hardship on him or is not in the public interest, he may apply for an adjustment to the NPA industry division that administers the order or makes the allotment or allocation.

If the request for adjustment is denied, the manufacturer has the right of appeal to the board. The appeal must be filed within 45 days of the industry division's decision or, in cases of CMP allotments and materials allocation, within 45 days from today.

Appeals must be filed in quadruplicate with the Secretary, NPA Appeals Board, Office of the Administrator, National Production Authority, Washington 25, D. C. The notice of appeal must include the nature of the NPA action appealed from, the grounds for appeal, and copies of documents on the NPA action. The appeal must state whether an oral hearing before the board is desired.

Hearings are usually held twice daily in Washington. They are open to the public, except where national security or confidential data is involved. An appellant may be represented by counsel. At the board's discretion, representatives of NPA industry divisions, representatives of other Government agencies and other persons claiming interest in an appeal may participate in a hearing.

The normal period between the filing of an appeal with the board and the announcement of a decision is four weeks. The board's decision is final.

As of August 17, the board had:

1. Received 155 appeals.
2. Acted on 120 appeals as follows: relief granted, 25; relief denied, 51; cases dismissed (withdrawn by appellant, appeal, etc.), 44.
3. Decisions pending in 35 appeals as follows: hearings already held, 16; hearings to be held, 13; and cases in which no oral hearing has been requested, 6.

AUTOMATIC CASTING MACHINE PRODUCES SUPERIOR SOLDERS

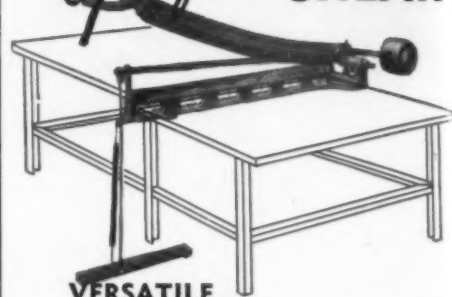
A new machine for the automatic casting of solders and other white metal alloys, has been perfected by engineers of the Federated Metals Division, American Smelting and Refining Company. The new machine has been named the "Castomatic" since it "cast" metals under "automatic" control. It is covered by U. S. Patent 2,459,892. Briefly described, a Castomatic installation is made up of the following components:

A melting kettle; a molten metal circulating pump; a molten metal circulating system; molds that connect to suitable outlet parts on the molten metal circulating system; a hydraulic system that furnishes the power required; and, an electronic control system that governs the machine cycle.

In operation, the Castomatic machine cycle is governed by the particular alloy bar size being cast. At intervals thus de-

(Please turn to page 242)

THE Jacques BENCH SHEAR



VERSATILE

A general purpose cutter easily mounted and moved.

FASTER PRODUCTION

Designed for in-line production with balanced cutting action.

FEATURES

Sizes — 24" to 120". Foot pedal holding clamp. Easy blade change for sharpening.

Write today for new folder showing Production Tables.



**HOBBS
MANUFACTURING CO.**

EST 1882 10 Salisbury St., Worcester 5, Mass.
Manufacturers of:

JACQUES hand and power shears,
TRI-POWER Die Presses, Slitters and
Rewinders, HOBLOK and LOXIT Col-
ter Pins, TANGLEPROOF Lock Washers.

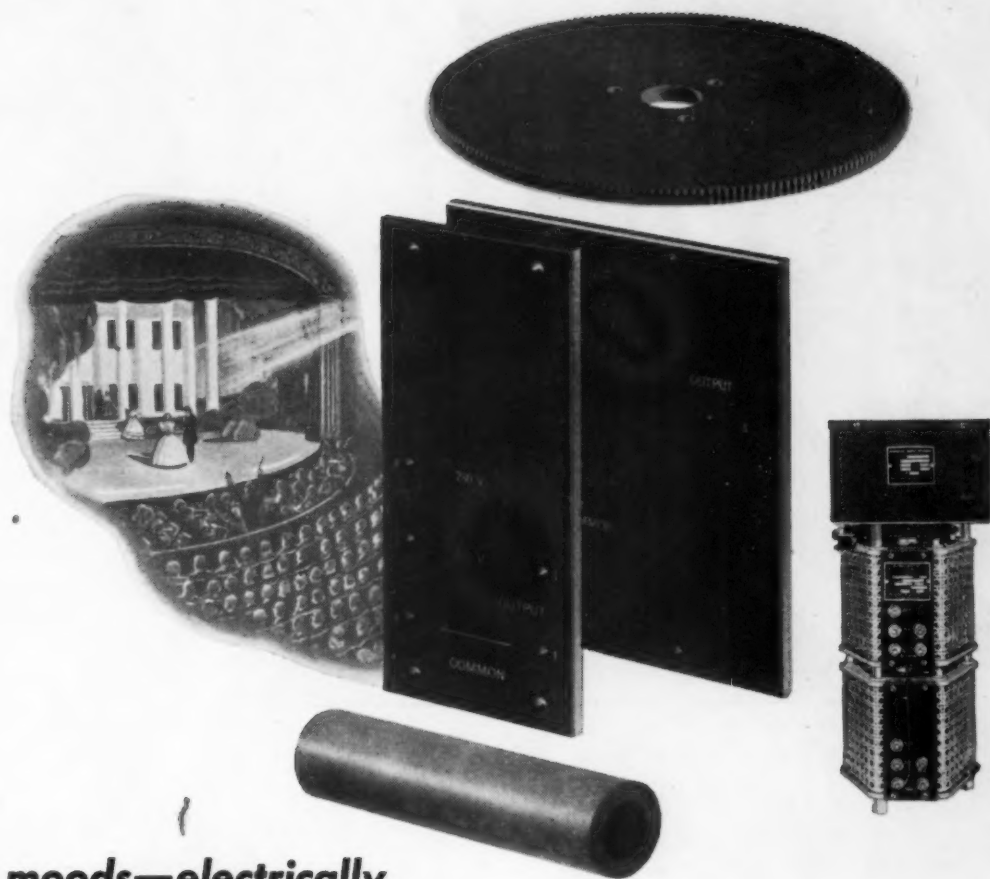
Herbrand
PRECISION

DROP FORGINGS

... any size or shape
up to 200 lbs.

Whatever your requirements in forgings, Herbrand is your most faithful source of supply ... as it has been for hundreds of industries since 1881. Your inquiries are solicited.

Herbrand DIVISION
THE BINGHAM-HERBRAND CORP.
FREMONT, OHIO



How to manage moods—electrically

The parts enlarged in the illustration above are a drive gear, a shaft, and panels used in the many types of Superior Electric Company *Powerstats*.

These parts have one characteristic in common. They are all made from Synthane, a laminated plastic.

Superior selected Synthane for its *combination* of properties. Synthane is dielectrically and mechanically strong, easy to machine, and is attractive in appearance. The panels are easily printed at a saving over engraving cost; the gear is silent.

A *Powerstat* is a manager of moods. Installed in the lighting systems of theatres, salons, banks, and other places of business and recreation, a *Powerstat* controls the inten-

sity and blending of light to help create any mood from the spectacular to the subdued, from reverence to revelry.

Synthane is made in many grades, each particularly desirable for some electrical, chemical or mechanical purpose. Yet each grade possesses a *combination* of other valuable characteristics. Light weight, mechanical strength, resistance to moisture, corrosion and abrasion, high dielectric strength, low power factor, dimensional stability under a variety of conditions, and ease of fabrication are just a few of them.

Should these properties of Synthane suggest a possible application to you, write for more information. Synthane Corporation, 7 River Road, Oaks, Pennsylvania.

PLASTICS WHERE PLASTICS BELONG

SYNTHANE

S

Manufacturers of laminated plastics



METAL CUTTING
BAND SAWS

Regular—Skip Tooth
Spring Temper

SOLID TOOTH SAWS

INSERTED
TOOTH
SAWS

SEGMENTAL
TYPE SAWS

(All 3 Types of Saws
Also Furnished with Carbide Tips)

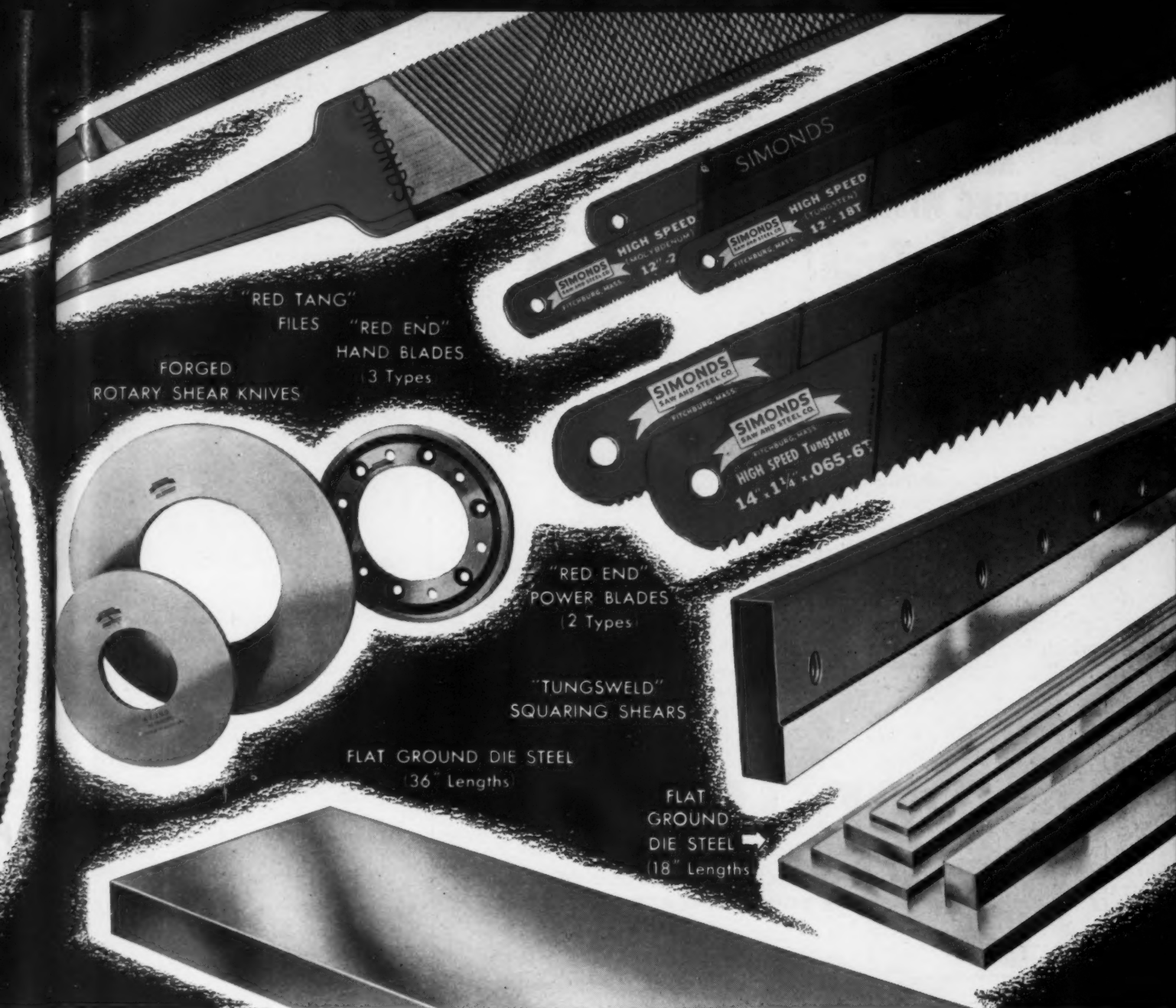
**If You Cut Metal
CUT MORE
with
SIMONDS
Industrial Line**

Over 100 years devoted to the
ideal of developing the foremost
line of cutting tools in this country
... that's what underwrites every
purchase you make of any product
in the Simonds Line.

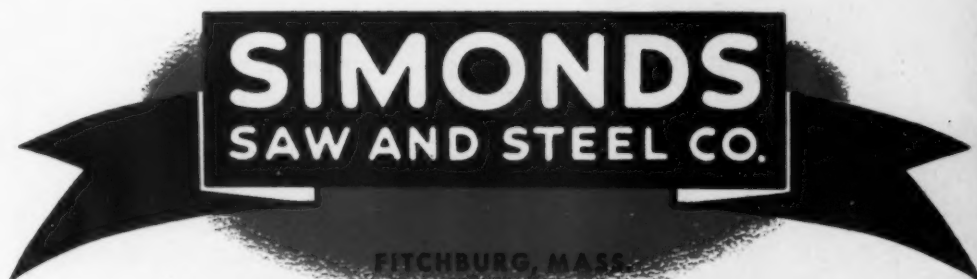
And don't forget this: You get
100% Simonds Quality Control...
beginning with steels processed
your job from Simonds own steel mill
... and going all the way through
Simonds famous Windowless Plant
(first in this country).

Here, in this completely con-
trolled-conditions plant, modern
straight-line production methods are

The Simonds Line is



to the complemented by special equipment
 orement to produce cutting tools of *one qual-*
 country *only* . . . Simonds TOP Quality.
 es ever. And you can bank on it that
 produ these Simonds Tools will deliver
 top performance on *any* job . . .
 You get from hand filing and hacksawing,
 ntrol. to production machine cutting with
 essed / saws of all types and sizes. So, if
 eel mill low-cost and high-level production
 through are vital to you . . . then specify
 ss Plan "Simonds" to your distributor or
 dealer on any requirement you may
 ly com have on which the tools shown
 modern above will serve.
 hods an Remember: *You start to save, the*
minute you say SIMONDS!



Branch Offices in Boston, Chicago, San Francisco and
 Portland, Ore. Canadian Factory in Montreal, Que.

s the Production Line

KEYSTONE MUSIC SPRING WIRE

Does the Trick!

Keystone Music Spring Wire has a smooth way of making production problems disappear for manufacturers of intricate springs and parts.

The structural soundness and uniformity of this ultra-quality wire is attained by careful selection of raw materials, slow and meticulous processing and constant examination from start to finish. Rigid final inspections include coiling, torsion and bend tests which further assure end products of the highest quality.



Scrap Is Vital!

COLLECT EVERY POUND OF SCRAP IN YOUR PLANT AND SELL IT TODAY

Iron and steel scrap, the vital ingredient in steel making, is in critically short supply. In order to keep America's steel industry producing at the highest rate in history . . . the "forgotten" or neglected scrap in your plant is urgently needed.

Search every corner of your plant for obsolete and discarded machinery, plates, sheets, gears, rails, scrap of every description. Sell it to your scrap dealer. More scrap turned IN . . . means more steel turned OUT to supply the tremendous demands of our domestic and defense objectives.



(Continued from page 238)

terminated the molds open, finished bars fall out onto a receiving chute and the molds close.

The range of bar sizes and weights which can be cast is rather large. To date the smallest bar which has been successfully produced is a one-pound bar of solder about 13 inches long. It is the type generally used by tinsmiths and plumbers. The largest bar regularly produced weighs about ten pounds—it is notched and usually is a bearing metal alloy.



Federated Metals Division Castomatic machine. Solder flows from melting pot at left through electronically controlled valves to the molds.

Federated engineers state that the metallurgical and physical properties of Castomatic products are of superior quality. They are virtually free of entrapped drosses, are uniform in dimension and weight, are clean and shiny, and show a minimum of segregation.

Following the success of the first model, seven of the Castomatic machines were built, one being put into service at each of the Federated plants in Newark, Pittsburgh, St. Louis, Houston and San Francisco, and two at the Whiting, Ind. plant.

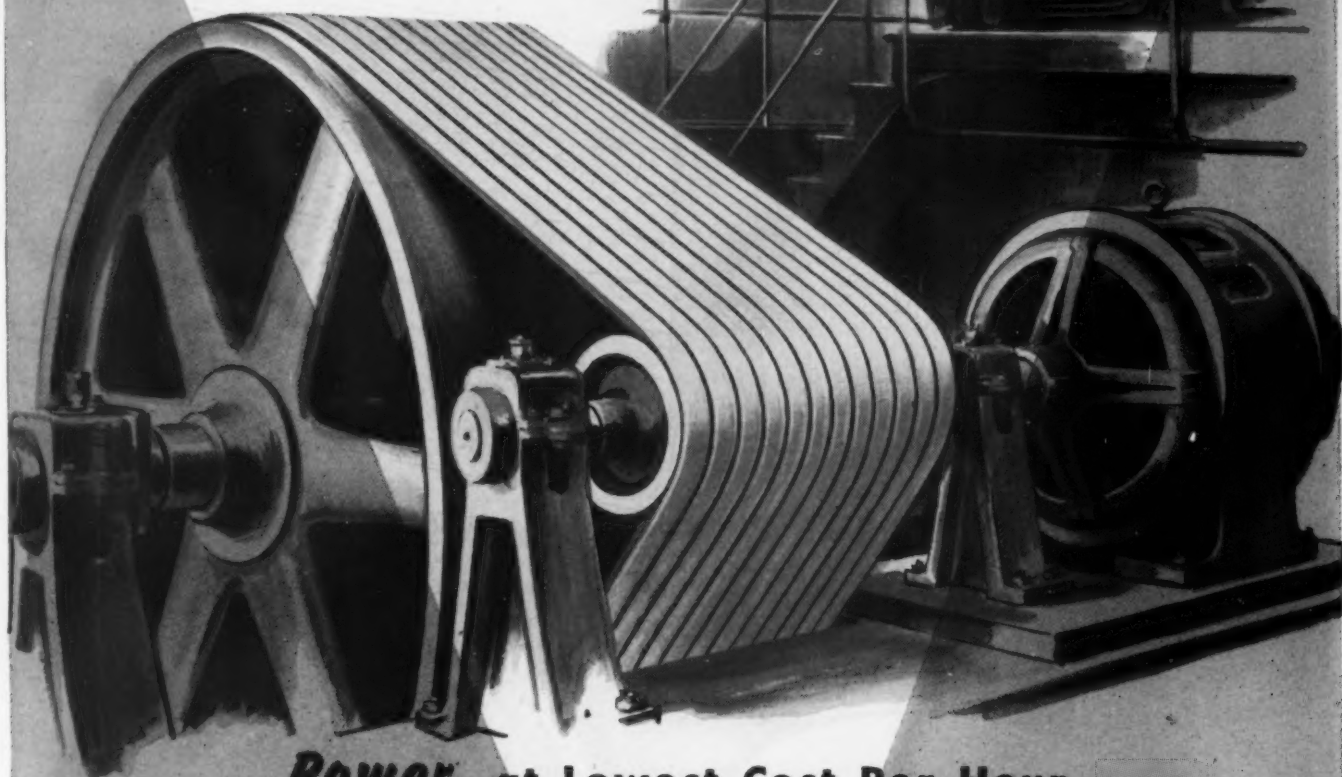
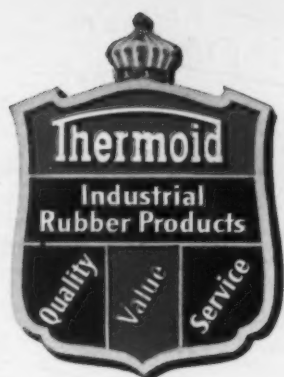
PRIME CONTRACTORS EXHIBIT FOR SUBCONTRACTORS AT DETROIT

Companies in Michigan and surrounding states interested in obtaining defense subcontracts are invited to send representatives to a Prime Contractors Exhibit for prospective subcontractors, to be held October 30 through November 2 in the Agricultural Building, Michigan State Fair Grounds, Detroit, Mich. Sponsors of the Exhibit are the Detroit Sub-Council of the Armed Forces Regional Council, the Detroit Board of Commerce, Adcraft Club of Detroit, Michigan Department of Economic Development, and the U. S. Department of Commerce.

Numerous displays of parts and equipment for which subcontractors are needed will be presented, exhibitor space being limited to prime contractors who are seeking subcontractors. Most of the exhibits will represent the hard metals industries, but the fields of electronics, plastics, packaging and others are also expected to be presented.

Further details may be obtained from Committee Headquarters, Inspector of Naval Material, Penobscot Building, Detroit 26.

(Please turn to page 246)



Power—at Lowest Cost Per Hour with Thermoid Multi-V Belts

Thermoid Multi-V Belts are pre-stretched to insure maximum power transmission without adjustment. They are constructed for flexibility and ability to absorb repeated shock loads... thoroughly impregnated with special rubber compounds to withstand moisture and abrasion, resulting in longer belt life.

Thermoid Multi-V Belts are available in matched sets—uniform in size and cross section. Their longer life and non-slip performance add up to "Power—at the lowest cost per hour."

Your Thermoid Distributor can help you with your power belting problems—whether you need Multi-V, F.H.P. or flat transmission belts. For unusual belt problems, a Thermoid Field Representative is always available to give you the benefit of his experience.

Thermoid

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah



Life-linestarter
PAIRED FOR PRODUCTION
Life-line motor

PURCHASE ORDER **TO SUPPLIER**

FORM 688 ORIGINAL

SEND INVOICE IN CARE OF
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PURCHASE ORDER **19395**

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PART DROP

One order

saves time . . . simplifies procedures

Every time you receive a requisition for an electrical drive you are confronted with purchasing two main components—a motor and its control. The two work together as a team. In fact, the control characteristics must dovetail with the characteristics of the motor. It's only logical that a manufacturer that builds both motors and controls can co-ordinate their design and manufacture down to the smallest detail.

By specifying Westinghouse matched motors and controls, you insure your investment. They are paired for performance. You also profit by the undivided responsibility offered. This means one source for deliveries . . . one source for servicing and repair parts.

Plus, you can place one order for *both* motors and control. This cuts in half the work of order-

ing. Procedures are simplified every step of the way.

What's more, you receive the latest, most advanced design of equipment. Take the Life-Line motor and Life-Linestarter, for example. Each is the result of never-ending motor and control research and manufacture. Each incorporates exclusive features unobtainable on other equipment.

Why not simplify procedures . . . benefit from undivided responsibility . . . insure production schedules by ordering matched Westinghouse motors and controls. A check with your nearby Westinghouse representative will bring you full information. Call him today. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-21660

YOU CAN BE SURE... IF IT'S

Westinghouse

Life-Line

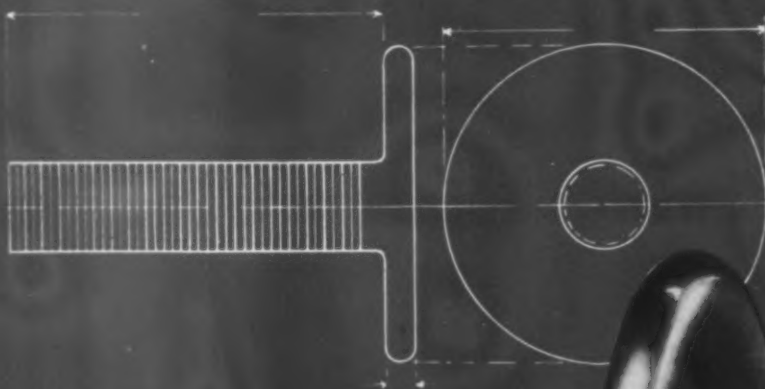
MOTORS and CONTROLS



How ICE CUBES get SQUARE



Has it occurred to you that modern home appliances such as ranges and refrigerators must be provided with leveling adjustments? Floors often are not level; therefore, a special **®** leveling bolt is used under each corner of your refrigerator. These bolts give the housewife level trays of liquids—they assure that the refrigerator door swings properly—and even the ice cubes are always on the square!



THIS SPECIAL **®** LEVELING BOLT

Keeps Everything **LEVEL**



APPLICATIONS

For Refrigerators, Ranges, Washing Machines, Oil Burners, and similar appliances, either movable or stationary.

There's a special job to do and a special **®** bolt does that job. The extremely large head plus the high strength of this rust proof bolt meet the problem. Control from the raw billet to the finished bolt is one reason for quality. Other leveling applications for these bolts are many. They can be furnished with anti-skid or smooth surfaces; with shoulder for wrench adjusting, or made to suit your particular specifications. We'll gladly help you "keep it on the level."

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Our Specialty is **"SOMETHING SPECIAL"**

HANDBOOK INCLUDES 21 MINERAL WOOL INSULATION SPECIFICATIONS

A practical insulation handbook, "Mineral Wool Insulation Specifications & Standards", has just been published by the Industrial Mineral Wool Institute for buyers, engineers, plant superintendents, specifications writers and contractors as a guide in properly selecting materials and application practices for government contracts and as a basis for specification within industry itself. Bound in a tough flexible cover for long use on design tables and in the field, the handbook includes 21 specifications and standards by four government agencies and the American Society For Testing Materials.

Among the subjects helpful in specifying and installing mineral wool insulations for most satisfactory and reliable performance are: types of products, physical properties, characteristics, construction, selection, standard dimensions, temperature limits, thicknesses, auxiliary materials, application techniques and testing methods. Specifications by each of the five sources are placed together in sections identified by celluloid tabs. The handbook, with removable binding posts, may be kept complete and up-to-date by the insertion of additional pamphlets, data, notes and newly-issued specifications.

Of the 15 specifications and standards by governmental agencies, seven are Federal Specifications approved by the Director of Procurement for the use of all departments and establishments of the Government. Three Specifications are by the Navy Department and two by the U. S. Maritime Commission. Also included are Commercial Standards CS117-49, CS105-48 and CS131-46 issued by the National Bureau of Standards (U. S. Department of Commerce).

Of the six A.S.T.M. Specifications, three Tentative and two Proposed Specs previously have not been available to industry. The A.S.T.M. Specifications cover six types of industrial mineral wool insulation—mineral wool cement, batt, blanket, felt, and blanket-type and molded-type pipe insulation.

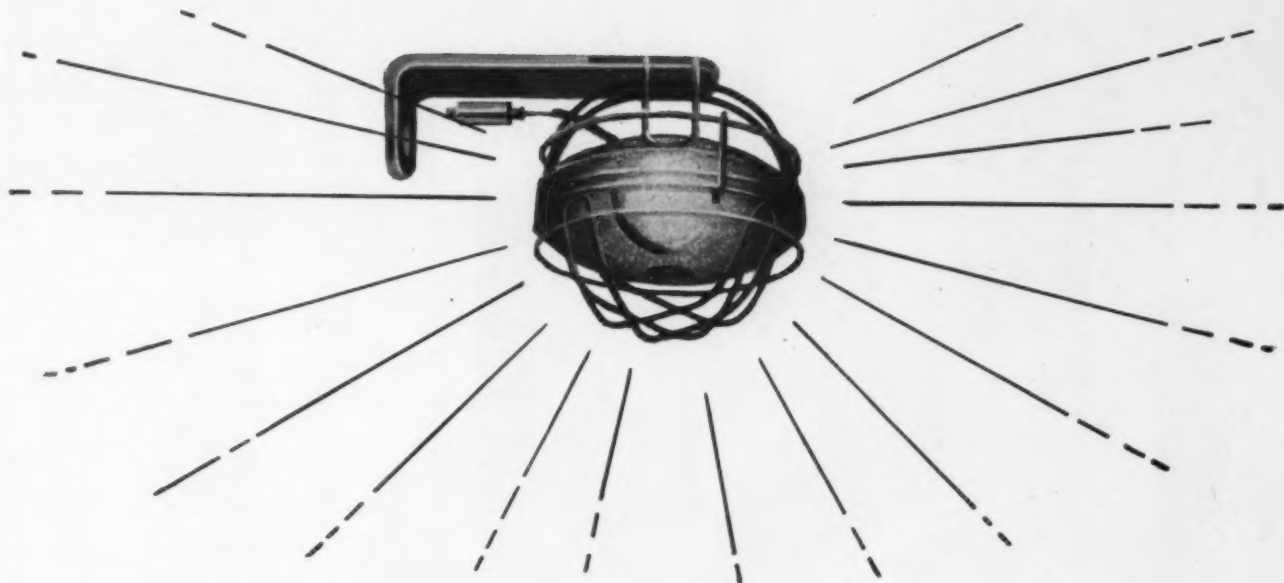
Copies of the handbook may be obtained, at \$3.20 each, by writing the Industrial Mineral Wool Institute, 441 Lexington Ave., New York 17, N. Y.

♦ ♦ ♦

"MILITARY PACKAGING GUIDE"

"Military Packaging Guide," Bulletin 58N.C., 36-page, pocket-size booklet, which is said to simplify complex government packaging specifications, is available from the Mehl Manufacturing Co., 2057 Reading Road, Cincinnati 2, Ohio. It outlines government packaging specifications which involve flexible protective barriers against weather, water, moisture, mildew, corrosion, etc. The company states that it presents comprehensive information available on current Army, Navy and Air Force requirements in the simplest possible manner. More than 30 JAN, AN, MIL, UU and other specifications are mentioned and cross-indexed. Methods and materials are illustrated.

(Please turn to page 248)



THE FIRE WATCH THAT NEVER SLEEPS

ARE you ready for fire *when* it strikes? Week ends? Nights? During shut downs? Put a Kidde Automatic Fire Extinguisher System on the job—it's *always* on the alert against fire.

The heat from a fire hits the Kidde detector . . . sends a signal that releases flame-smothering carbon dioxide automatically. Such a system can protect a single space . . . or many spaces throughout the plant.

Wherever a hazard exists—in engine rooms, fuel storage rooms, document vaults, electrical equipment—you can depend on fire-sensitive, fast-acting Kidde automatic or manual systems to protect your property. Call on us for full information.

Kidde

Walter Kidde & Company, Inc., 1047 Main Street, Belleville 9, N. J.

Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.

Special Absorbents Provide Easier Floor Maintenance-Safety



These two proved absorbents, called Quik-Sil and Aqua-Lic, are specially compounded to absorb completely and quickly dangerous oil, grease and water-base substances from floors, thus helping to prevent slipping accidents and fire.

Approved by Underwriters Laboratories, Quik-Sil and Aqua-Lic are amazingly effective absorbents. Quik-Sil absorbs oils, greases, kerosene, naphtha, oleum spirits, gasoline, thinners, and any mineral oil base material. Aqua-Lic dries up water soluble lubricants, water-base coolants, soap water solutions and grinding compound emulsions.

One of the most important features of Quik-Sil and Aqua-Lic is their fire resistant properties. They do not burn. In addition, they make floors skid-proof.

Quik-Sil and Aqua-Lic are ideal absorbents for metal working plants, machine tool builders, aircraft plants, factories, railway repair shops, oil storage rooms, paint shops, car barns, textile plants, shipyards and filling stations.

Free test samples of Quik-Sil and Aqua-Lic are available upon request. Send inquiries on your company letterhead to the manufacturer. The Diversey Corporation, Maintenance Products Dept., 1820 Roscoe St., Chicago 13, Illinois. In Canada: The Diversey Corporation (Canada) Ltd., Lakeshore Road, Port Credit, Ontario.

Another outstanding product you will want to investigate thoroughly is Diversey Elektro-Purj-It. This amazing multi-purpose cleaner is ideal for all general plant cleaning . . . removes dirt and grime like magic and at a cost of less than 2 cents a gallon. Write for free sample.

BOOKLET ON INSURANCE PUBLISHED BY AMA

"Developments in Multiple Line Underwriting and Catastrophe Coverage" is the title of a booklet which also contains a paper on Third-Party Liability, just released by the American Management Association, 330 West 42nd Street, New York 18, N. Y. This is Insurance Series release No. 89, and contains papers presented at the AMA Insurance Conference held in Chicago last November. Subject matter is as follows:

"Broader Coverage Through Multiple Line Underwriting", introduction and discussion; "Indemnity Limits of Third-Party Coverage"; "Catastrophe, Excess and Deductible Fire and Business Interruption Insurance"—Recent Trends and Developments, Implications for the Insurance Buyer, and Discussion; and "Pitfalls in Valuation for Inventory and Business Interruption Insurance".

The price of the publication is \$1.00 (members) and \$1.25 (non-members).

1 1 1

SOCIETY OF PLASTICS ENGINEERS TO HOLD ANNUAL IN CHICAGO

The Eighth Annual National Technical Conference of the Society of Plastics Engineers, Inc., will be held January 16-17-18, 1952, at the Edgewater Beach Hotel in Chicago. It will be sponsored by the Chicago section of the S.P.E.

"Plastics Horizons" will be the theme for the conference, and technical papers presented will examine the vital role of plastics in the national economy and the defense program. The Society of Plastics Engineers has its headquarters in the Security Bank Building, Athens, Ohio.

1 1 1

DIRECTORY OF RUBBER INDUSTRY NEW EDITION

The 1951-52 Edition of the Rubber Red Book, Directory of the Rubber Industry, is announced by the Palmerton Publishing Co., Inc., 250 West 57th Street, New York, N. Y. The current edition exceeds 1000 pages and the price is \$7.50 per copy.

The directory content is as follows: Rubber Manufacturers in the United States and Canada; Classified List of Rubber Products and manufacturers; Rubber Machinery manufacturers, Laboratory and Testing Equipment suppliers; Accessories and Fitting suppliers; Classified List of Rubber Chemicals and Compounding Materials; Fabrics and Textiles suppliers; Natural Rubber and Related Materials suppliers; Reclaimed Rubber manufacturers; Crude Rubber type descriptions; Natural Rubber and Related materials suppliers; Reclaimed Rubber manufacturers; Synthetic Rubbers and other Rubberlike Materials; Latex and Related Materials; Consultants, and Branch Offices and Sales Agents of leading suppliers. There is also a comprehensive directory of Who's Who in the rubber industry.

(Please turn to page 252)

WASHINGTON STEEL CORPORATION

MicroRold Stainless Steel

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JOHN C. RICHARDS
GENERAL MANAGER OF SALES

October 1, 1951

YOU CAN STILL PRODUCE STAINLESS STEEL PRODUCTS

TYPE 430 IS STAINLESS STEEL

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HAVE YOU EXPLORED THE POSSIBILITIES OF MICROROLD TYPE 340 SHEETS?

MicroRold Type 430 offers the same fabricating advantages, such as micro-accurate thickness control, uniformity of gauge, increased product yield, longer die wear and excellent surface conditions, as characterized by the MicroRold trade name.

Our warehouse distributors are available to assist you in solving application and supply problems. Write for the name of the MicroRold distributors in your area.

Yours truly,

WASHINGTON STEEL CORPORATION

John C. Richards
John C. Richards,
General Manager of Sales



OCTOBER, 1951

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249



"Well, for one thing, it leaks."

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SPONGEX Stops Leaks...

...also noise, shock, dust, vibration and air.

This test driver reports his tank in need of a moisture-proof seal.

Spongex cellular rubber will do the trick and keep *doing* the trick after endlessly repeated slammings... after oil has failed to soften it and temperatures fluctuating over a wide range have failed to stiffen it.

It will be fire resistant and have excellent aging properties.

It will meet Federal Specifications MIL-C-3133 & MIL-R-6130.

This tank might even be lined with *Spongex Plastic*, expanded polyvinyl chloride yielding outstanding insulation value (0.20 to 0.25 K factor) and possessing excellent crash pad properties. Also oil and fire resistant.



The world's largest specialist in the manufacture of cellular rubber.

THE SPONGE RUBBER PRODUCTS CO. • 404 Derby Place, Shelton, Conn.

STRIPS • CORDS • TUBING • SHEETS • MOLDED FORMS • DIE-CUT SHAPES



It's "Business Magic!"

... say more and more smart businessmen who have made *cleanliness* a *profitable business asset* by using Linen and Towel Service.

LINEN and TOWEL SERVICE

Offers 4 Important Money Saving Benefits to You ...

1. LOW COST SERVICE ...

The service charge is so *low* that every company can *easily afford* the better business asset of *cleanliness*!

2. PROMPT DELIVERY ...

We deliver clean linen as *you* want it ... in the *sizes* and *styles* you need. You pay only for what you use.

3. HYGIENIC LAUNDERING ...

Modern, scientific laundering assures you of sterile, hygienically clean linens—always.

4. LARGE SCALE BUYING ...

We *invest* in top quality linens *for you*. Experts buy in large quantities—at *prices far lower* than *any* individual could do himself.

CALL the Linen and Towel Supplier in your locality—he'll show you how to improve business, save money. Get the interesting, informative booklet on Servilinen by **WRITING DIRECT TO: The Linen Supply Assn. of America, 22 W. Monroe St., Chicago 3, Illinois.**

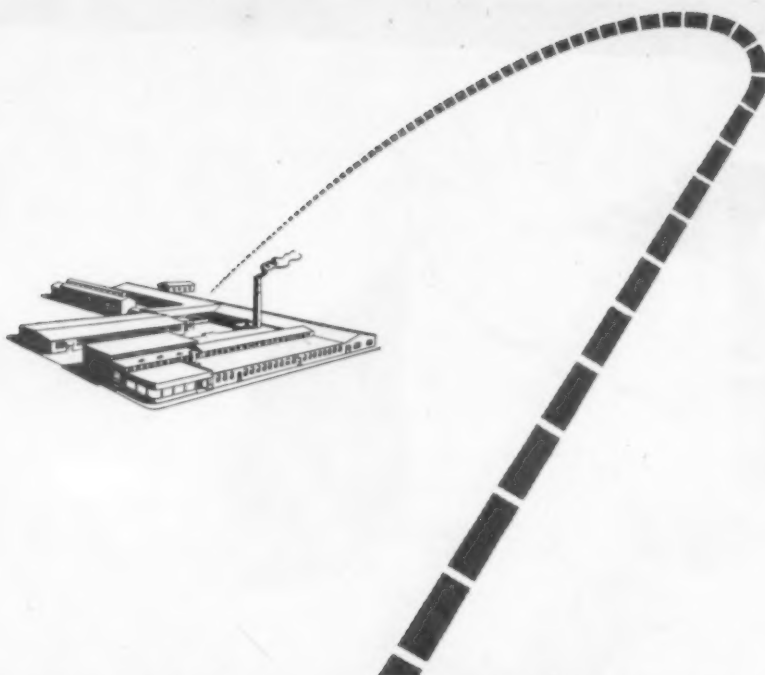
This campaign is being sponsored in the interests of the linen supply industry by

M. SNOWER & COMPANY

Division of Opelika Manufacturing Corporation, furnishers of washable service apparel and towels to the linen supply industry.

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on nearby shelves
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TAPS**

BAY STATE TAP & DIE CO., MANSFIELD, MASS.

MATERIAL PROBLEMS OF THE EMERGENCY—AMA BOOKLET

"Materials Problems of the Emergency"—"Production for the Armed Services," is the title of new booklet, Production Series, No. 198, announced by the American Management Association, 330 West 42nd Street, New York 18, N. Y.

The new booklet contains important papers presented at the AMA Production Conference held in New York in March of this year. Titles of papers are as follows:

"The Government's Conservation Program";

"Conservation and Substitute Materials";

"The Pattern of our National Production";

"The New Controlled Materials Plan"; by Walter C. Skuce;

"Government Controls—Their Effect on Procurement", by Stanley W. MacKenzie;

"The York Plan of Industrial Mobilization";

"Meeting the Armed Service's Quality Requirements" a panel session: Introduction; Quality Control Policies of the Air Force"; Quality Control Policies of the Army"; Control Policies of the Navy"; and discussion.

The price of the publication is \$1.00 to members, and \$1.25 to non-members.

♦ ♦ ♦

SLIDE CHART IDENTIFIES STAINLESS STEEL FASTENINGS

Slide chart, designed to quickly identify A-N numbers pertaining to stainless steel fastenings, which instantly identifies stainless steel nuts, screws, bolts, rivets, cotter pins and washers which are listed in A-N specifications, is available from Anti-Corrosive Metal Products Co., Inc., Castleton-on-Hudson, New York. The chart is of the familiar sliding type and features five windows in which pertinent information appears for each A-N number selected. The chart is said to be of material aid to purchasers of stainless steel fastenings.

(Please turn to page 256)



"WHEN YOU GETTING YOUR NEW GLASSES, JIMSON?—YOU'RE HEARING THAT CRACK IN THE WALL AGAIN!"
COURTESY WHEELCO INSTRUMENTS COMPANY



A BLESSED EVENT

GAIR
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OCTOBER, 1951

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UNION CHAIN is at your service



Suppose You Need a UNION Heavy Duty Chain

... for a drive or conveying application where heavy loads, slower speeds, long life and moderate cost are factors. Union Chain manufactures a complete line of these heavier types of chains, sprockets, flights and aprons, in addition to roller chain and silent chain, and is therefore in a position to make competent, unprejudiced chain recommendations.

Furthermore, an important phase of Union's service to its customers is the designing and building of special chains for unusual applications, particularly for conveying and elevating. Union is in an unusually fortunate position to render such service since we manufacture steel chains of all types and nothing else. This specialization has given us an unusual insight into problems of power transmission and conveying which our customers find valuable to them.

Perhaps we can be of help to you: Your inquiry will be welcomed.



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UNION SILENT CHAIN

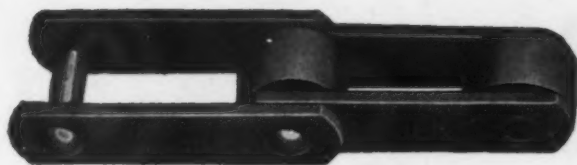


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TYPICAL UNION DRIVE AND CONVEYING CHAINS



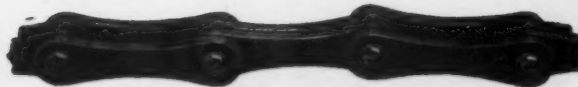
HB STRAIGHT SIDE BAR ROLLER CHAIN



BRIDGE CHAIN



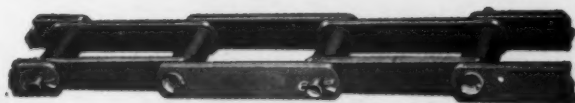
BP CHAIN



BP ICE CHAIN



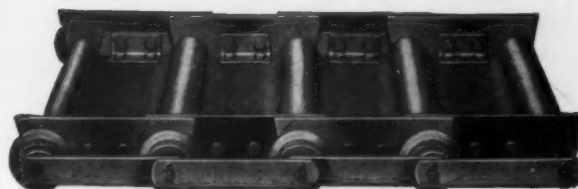
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AND STEEL CHAIN



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APRON CONVEYOR STYLE B

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The Union Chain and Manufacturing Company



Sandusky, Ohio, U.S.A.

This Special Pittsburgh Brush*
**CLEANS RED-HOT
 CASTINGS in 30
 seconds**



* An actual case history from the U. S. Pipe and Foundry Company, Birmingham, Alabama

A PITTSBURGH brush provides the answer for U. S. Pipe and Foundry's problem of cleaning red-hot castings. This rugged brush works 40 hours a week, turning out thoroughly cleaned castings at the rate of one every 30 seconds . . . a speed record for any brush cleaning operation of this type.

**LET PITTSBURGH ENGINEERS
 SOLVE YOUR BRUSH PROBLEMS**

Pittsburgh's complete line of brushes of every type, for every purpose, will provide a practical, economical solution of any brush problem you might have. Drop us a line on your company letterhead for a copy of our new booklet that shows, through actual case histories, how Pittsburgh can help cut your brushing operation costs. Address: PITTSBURGH PLATE GLASS COMPANY, *Brush Div.*, Dept. M3, 3221 Frederick Ave., Baltimore 29, Md.



PITTSBURGH

**Power Driven
 BRUSHES**
 BRUSHES • PAINT • GLASS • PLASTICS
PITTSBURGH PLATE GLASS COMPANY

**COLOR MOVIE ON
 "THE TUBE OF TOMORROW"**

Wolverine Tube Division of Calumet and Hecla Consolidated Copper Company, Incorporated has just completed production of a movie entitled "The Tube of Tomorrow". The twenty-five minute film is in color and requires a 16 mm sound projector.

The film covers the modern manufacturing processes employed by Wolverine in producing seamless, non-ferrous tubing in its new plant in Decatur, Alabama.

The film is available upon request through the Advertising Department, Wolverine Tube Division, 1850 Guardian Building, Detroit 26, Michigan.

♦ ♦ ♦

**SQUARE D DISPLAY COACHES
 BEGIN SECOND NATIONAL TOUR**

Completely refitted and overhauled, Square D's two Display Coaches, the Milwaukee and the Detroiter, recently commenced a repeat visit to 37 Eastern States. The display coaches were originally conceived as a method of taking



the company's complete line of electrical distribution and control equipment to its customers. The first 50,000 mile trip extended over fourteen months. By traveling back roads to isolated sections and covering all metropolitan marketing areas, more than 45,000 people were personally conducted through the exhibits.

♦ ♦ ♦

**"CORROSION RESISTANCE OF
 COPPER AND COPPER ALLOYS"**

For twenty-five years, The American Brass Company's technical staff has conducted continuous laboratory research and field study of the nature of corrosive attack on copper and copper alloys. The results of these studies have been published now in a 24-page booklet, "Corrosion Resistance of Copper and Copper Alloys." This publication, first of its type in the industry, explains the chemical and physical nature of corrosive attack in its various forms. Included is a tabulation indicating the relative corrosion resistance of the principal types of copper and copper base alloys when in contact with 183 different corroding agents. This booklet, Anaconda Publication B-36, is available without charge from The American Brass Company, Waterbury 20, Conn.

(Please turn to page 260)

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Demonstration

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and improve
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In Canada: Eaton Automotive Products, Ltd., London, Ont.

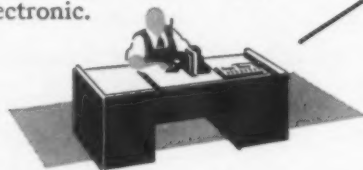


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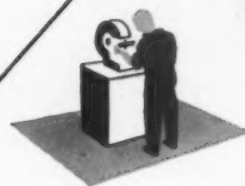
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Kurz-Kasch

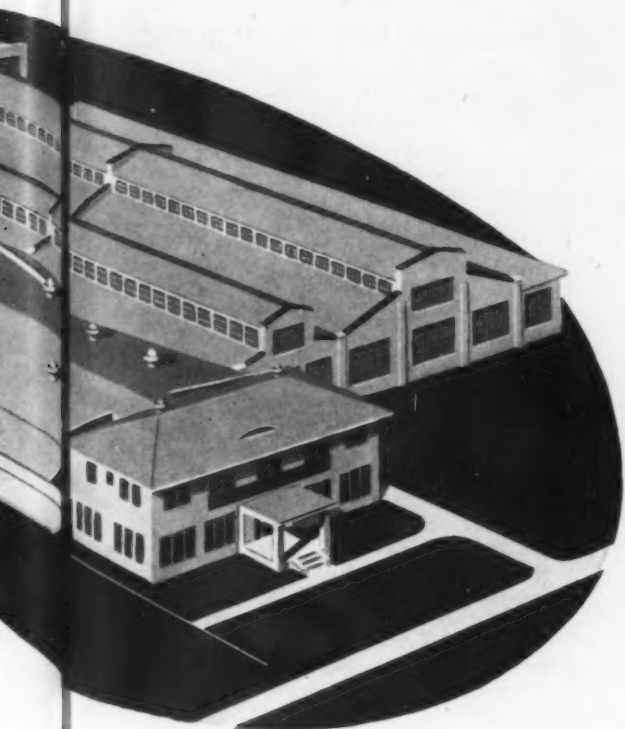
For over 35 years Planners and Moulders in Plastics

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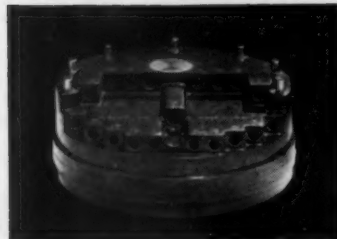
or Plastics Plus

All Thermosetting Materials—Teflon— Glass-Filled Polyester



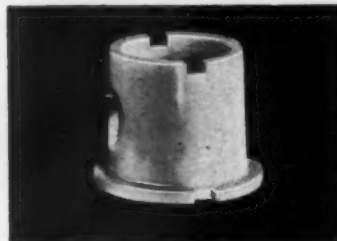
COMPANY POLICY: We have specialized in the moulding of thermosetting materials for the last 35 years, and we are today one of the foremost producers in the field. We pride ourselves on the truthful application of plastics—and this policy has netted us scores of customers who, as old friends, we still serve in the second generation. We are equipped to handle the entire job from design to finishing—to accept full moulding responsibility—to produce in large volume and ship on schedule. The K-K trademark on a plastic part stands for dependability—a promise made and met. Our consulting engineers are as close to you as your phone.

What K-K Research and Development Techniques Have Meant



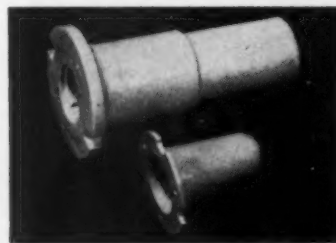
STANDARD THERMOSETTING MATERIALS

Eight years ago a new material—an asbestos rag-filled Melmac—was developed into this “heretofore impossible” application. We’ve been meeting production schedules with the original moulds—on time—at a fair price—ever since.



TEFLON VALVE LINER

Teflon is the most chemically inert material known—resists all acids, alkalies, etc.—is non-toxic—has zero water absorption—resists temperatures of 500° F. continuously—has excellent electrical qualities. Nothing known adheres to it—and moulded-in wax-like surface permits free turning without lubricants. We specialize in moulding complex shapes only—where machining of tube, rod or bar stock is undesirable. One of the first in the country to mould such shapes, we developed our own technique of pressing preforms, sintering and coining.



GLASS-FILLED POLYESTER ELECTRICAL PART

Now Kurz-Kasch engineers have solved the problem of moulding this material in complex forms and shapes—with holes and variable wall sections. **CHARACTERISTICS:** As a thermosetting resin, polyester offers excellent dimensional stability—good electrical characteristics—good resistance to chemicals and medium high temperatures. The glass fibres, with high tensile strength, are a good electrical insulator, are chemically inert and heat resistant. We will gladly discuss applications with you.



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*** CARBON STEEL
COMBINATION
PIPE AND NUT WRENCH**

CHASE BAG BOOKLET "WORTH LOOKING INTO"

A new booklet titled "Worth Looking Into" is being distributed by Chase Bag Company. Through its 16 pages, the booklet describes the company's purchasing policies; laboratory, research, engineering and manufacturing facilities; and illustrates the complete line of textile, paper and film containers and packaging materials made by the 104 year old firm.

Copies may be obtained by writing to Chase Bag Company, General Sales Offices, 309 W. Jackson Blvd., Chicago 6, Ill.

1 1 1

ANNOUNCES 1950 ANNUAL REPORT

Annual Report of the National Bureau of Standards for 1950, National Bureau of Standards Miscellaneous Publication 200, 113 pages, 28 halftone illustrations, 50 cents (order from Government Printing Office, Washington 25, D. C.).

Summarizing the scientific investigations conducted by the National Bureau of Standards during the fiscal year 1950, a 113-page illustrated booklet, just published by the NBS, contains accounts of current activities as well as more detailed descriptions of especially important scientific developments.

The scope of research and development at the NBS, both theoretical and practical, is indicated by the names of the 13 scientific and technical divisions: electronics, atomic and radiation physics, chemistry, mechanics, organic and fibrous materials, metallurgy, applied mathematics, mineral products, building technology, heat and power, electricity and optics, metrology, and radio propagation.

Among accomplishments during the year were the NBS Eastern Automatic Computer, SEAC, the fastest general-purpose, automatically sequenced electronic computer now in operation; the NBS Electronic Currency Counter, designed for the Treasury Department to count old paper money at an hourly rate of 30,000 bills; and the highly precise omegatron, which discriminates between atomic particles of different masses.

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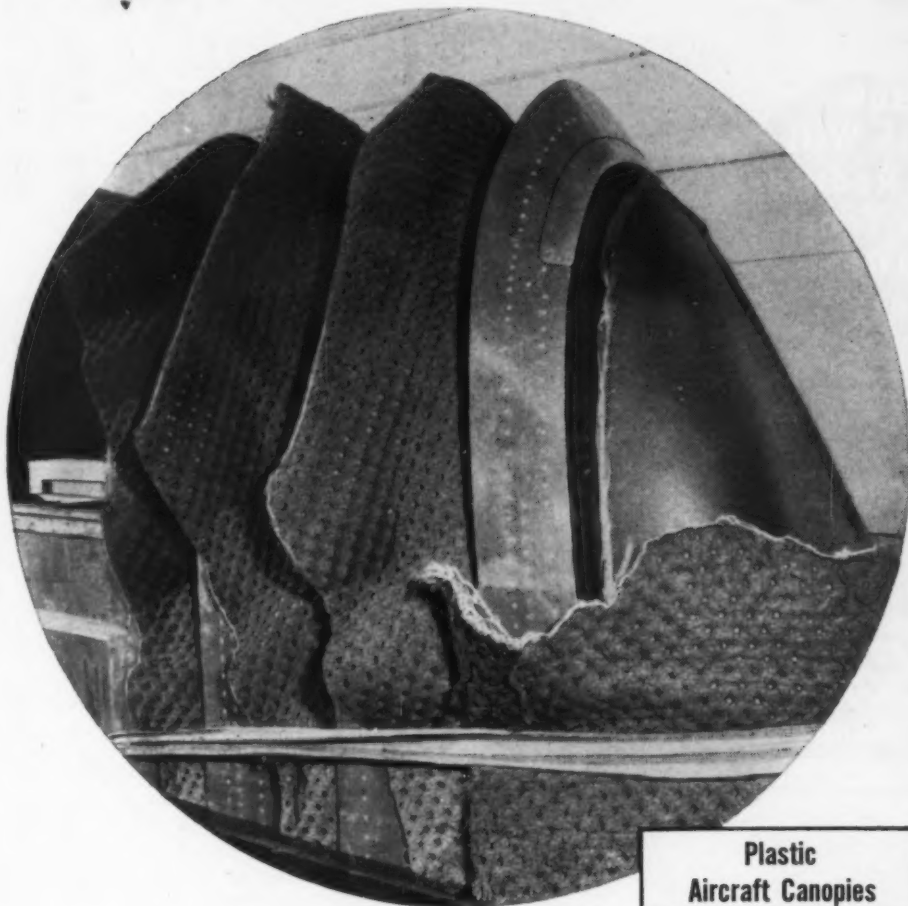
WALL CHART GIVES CORROSION DATA

A new 12" x 9" card to hang on plant or office walls gives useful corrosion resistance information for several analyses of stainless steel tubing and pipe. Corrodents ranging in severity from fresh water and blood to sulphuric and hydrochloric acids are listed, with the recommended alloys for use with each. The reverse side of the chart contains data on standard tubing sizes, as well as dimensions, pressures and tolerances for stainless pipe in schedules 5, 10 and 40.

Copies of the corrosion chart can be secured from The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

(Please turn to page 262)

Kimpak* Float Packaging



Plastic
Aircraft Canopies

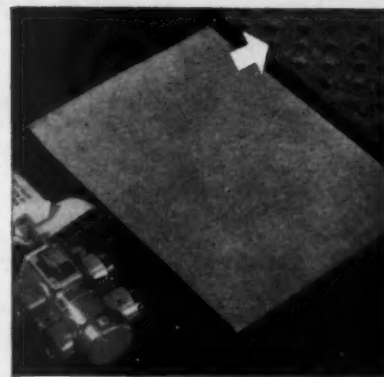
Cuts military shipping costs— reduces damage in transit!

From wartime packaging of a great range of military items—to peacetime protection of furniture, food, machinery and china! There's almost *no limit* to the type of products protected in shipment by KIMPAK* Float Packaging. But more important than its versatility is the fact that KIMPAK also provides optimum shipping protection at *lowest* true cost.

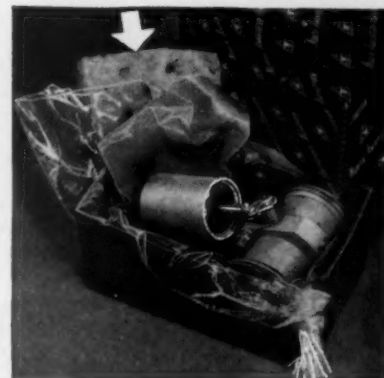
Delicate aircraft canopies for instance, are guarded against scratching and bruising; against shock, vibration and changes in humidity. Other finely machined parts are literally "floated" to their destination, free of the countless hazards of rail, truck, air or water transit—as well as storage. And soft, clean, grit-free

KIMPAK is as easy to apply as wrapping paper. Its many grades and thicknesses, too—in rolls, sheets or pads—let you "tailor" the packaging operation to your particular requirements.

So regardless of your packaging problem—and especially if you are engaged in the shipment of defense materials—it will pay to investigate the better protection and economy of KIMPAK Float Packaging. For complete information, including prices, see your nearest KIMPAK distributor listed in classified telephone directories under "Packing Materials" or "Packing Materials—Shipping"; or write to Kimberly-Clark Corporation, Neenah, Wisconsin.



Hydraulic Relief Valve — protected by Grade A paper, 1/2 inch KIMPAK Protective Cushioning, and foil-lined Kraft pouch.



Pressure Control Valve—protected by Saran moisture vapor pouch, KIMPAK, Grade A paper and Metal Edge box.



Selector Valve — protected by Saran moisture vapor pouch, KIMPAK, Grade A paper and Metal Edge box.

All photos courtesy of North American Aviation, Inc.

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OCTOBER, 1951

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Throw all your dirty, worn leather, rubber or cotton gloves in our steel drum. Ship to us. We correctly clean, sterilize, **COMPLETELY REPAIR**, sort, reshape, pair and ship them back to you as serviceable as new. Depending upon the gloves and their usage, gloves are being re-claimed by us 3 to 5 times. We specialize only in laboratory controlled re-claiming of rubber, leather and cotton gloves, aprons and clothing. Write for literature.

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BASIC MATERIALS AND ALTERNATES LISTED IN NPA PAMPHLET

Present availability of some 400 defense materials is graded and classified in a newly issued NPA pamphlet titled: "List of Basic Materials and Alternates."

The list is planned as a guide to industry, Government agencies and the armed services in the purchase, and use of alternates to replace scarce critical materials.

The list will be revised from time to time, to reflect significant changes in supply.

Classified In Groups

The 400 materials listed in the current publication are classified in three groups. Group I shows items "in very short supply"; Group II, those "in approximate balance with essential demand"; and Group III, those "in fair-to-good supply."

Metals in Group I include copper, aluminum, lead, tin, zinc, nickel, tungsten, cobalt, molybdenum and columbium.

Group II metals are cadmium, chrome, manganese, silicon and vanadium.

Metals in Group III are mercury, gold, silver and boron.

Steel and steel shapes are listed in all three groups.

Chemicals In Listing

Only well known and widely used chemicals are classified in the listing, due to rapid changes in the availability of such products.

Latest ratings of the many unlisted chemicals may be had by inquiring directly to the Chemical Division, National Production Authority.

Reviewing the current materials situation, NPA reported:

"In steel, the tightening of alloys has moved all alloy castings into Group I, where all types of sheet and strip have followed. An increasing threat to winter steel production continues in the unseasonable shortage of scrap.

"Among larger tonnage non-ferrous materials, copper is most critical. Refined copper, and copper and brass scrap are very short, with some open facilities in refining and fabricating.

Imports Needed

"Increased imports are needed to relieve shortage in tin and lead, but probably must await adjustment in world market prices.

"Zinc is tight because 70 percent of its tonnage is taken in galvanizing and in brass and aluminum alloys.

"Leather's improved situation reflects increased imports during the last six months, plus reduction both in military requirements and in seasonable civilian consumption.

"Plastics have shown generally a slight easing due to increased phenol supplies."

(Please turn to page 264)

WORLD'S LARGEST

PLASTIC INJECTION

MOLDING MACHINE

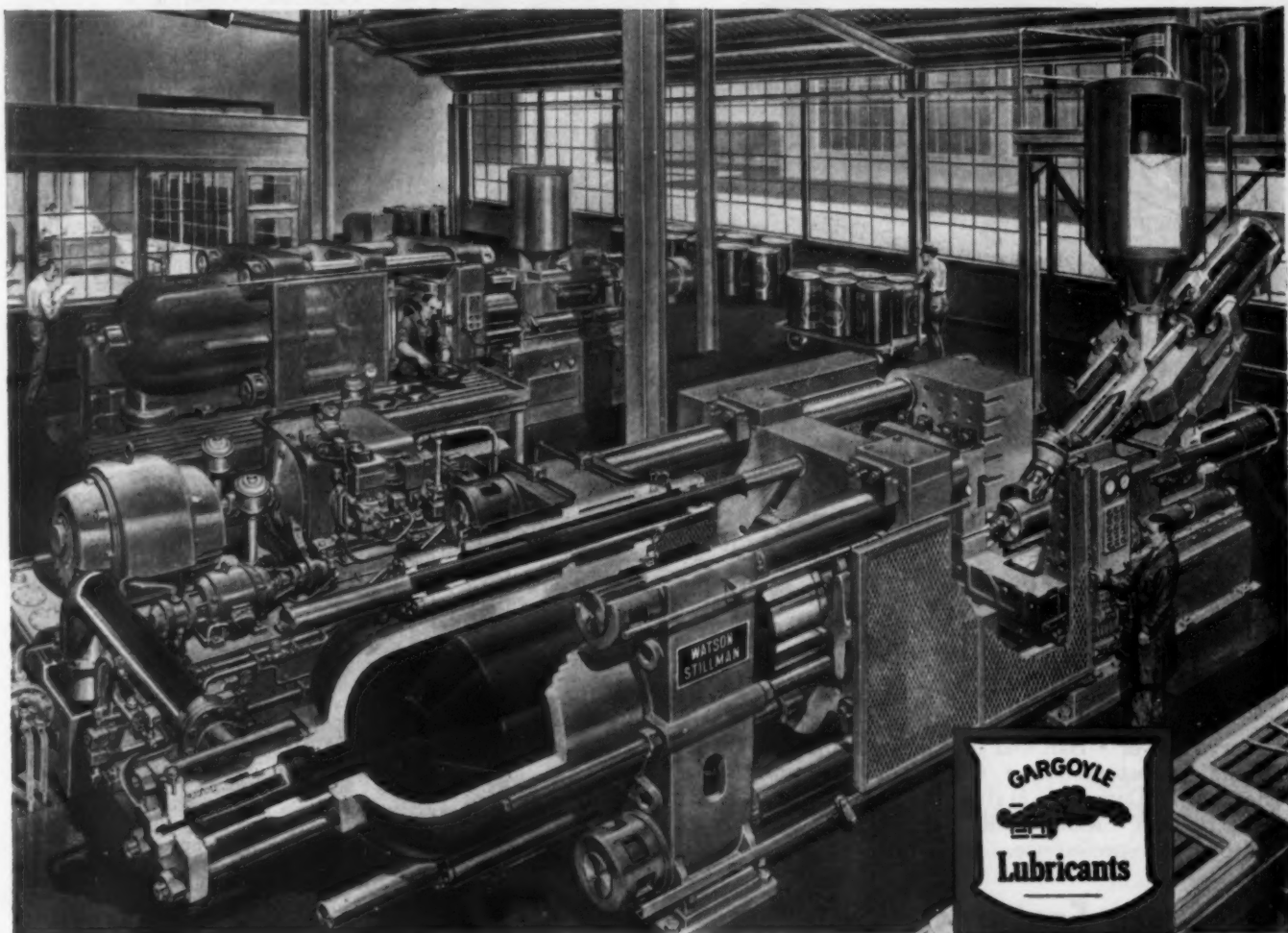
Only a few years ago, the largest plastic injection molding machine had a capacity of two ounces—turned out items the size of toothbrushes and pocket combs. Today, this 69-ton giant—designed and built by Watson-Stillman for Amos Molded Plastics, Edinburg, Indiana—can produce such products as "blisters" for bombers or washing machine tubs.

Heart of this machine is the hydraulic mechanism which must apply a force of 3,000,000 lbs. to the dies *positively and quickly*. This requires a hydraulic oil that keeps valves and pumps clean, prevents formations of gum, lacquer and rust. It also must separate quickly from moisture.

The Amos company, like so many other operators of the world's costliest hydraulic machinery, uses a famous Gargoyle hydraulic oil to assure maximum efficiency and production.

Why not let us help you get this same kind of performance from *your* machines? Call us *today*!

...Gets the World's Greatest Lubrication Knowledge and Engineering Service



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SUPERDUTY 1/4" PORTABLE Electric Drills—
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Models; each available in 8 speeds, 500 to 5000 rpm.
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343 West 83rd Street, Chicago 20, Illinois

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SUPERDUTY Portable Electric Drills

for Production • Maintenance • Construction Work

(Continued from page 262)

Alternates Described

Some recent uses of alternate materials are described in the pamphlet as follows:

1. Domestic graphite, properly sized, has been substituted successfully for madagascar fluke in making crucibles.

2. Mica paper is being used in certain applications to replace mica splittings in capacitors.

3. Reinforced plastics are finding many uses for all-weather applications.

4. Glass fibers are replacing a widening list of materials ranging from asbestos to silk.

5. Use of stainless clad equipment is conserving nickel by replacing solid stainless.

Copies of "The List of Basic Materials and Alternates" are available at district and regional offices of the Department of Commerce.

Copies in bulk may be purchased for one cent each from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

1 1 1

BOOKLET DESCRIBES THREE-IN-ONE METAL CLEANING MATERIAL

A description of how a recently developed metal cleaning material, Oakite Compound No. 33, removes oil and rust in one operation, and also prepares steel and aluminum for painting, is provided in a special booklet available from Oakite Products, Inc., 154 Thames St., New York 6, N. Y.

Whether applied in tanks or by hand, the new compound according to the booklet, has solvent and detergent properties which are markedly effective in removing stamping and forming oils, rust preventives, carbon smuts, soldering and welding fluxes, identification inks and similar soils. In addition, the material provides rapid removal of rust, heat scale, tarnish and other oxides.

In preparing metal surfaces for painting, the compound microscopically etches steel and cast iron and converts the surface layer of metal into a thin film of insoluble phosphates to provide excellent bonding of paint to metal, it is claimed. The etching and conditioning action of this material on aluminum sheet and aluminum castings is said to be similar.

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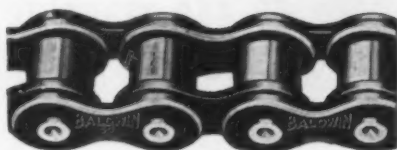
CHART IDENTIFIES STAINLESS STEEL SPECS

The availability of a new chart by means of which stainless steel specifications can easily be identified, is announced by Peter A. Frasse & Co., Inc., 17 Grand St., New York 13, N. Y. The chart shows chemical analysis requirements for each of 37 Military, Army, Navy, Aeronautical, and Federal specifications. It also lists specified forms (bars, wire, etc.) and nearest corresponding SAE, AISI, and AMS type numbers. The chart is printed on durable cardboard in file card size.

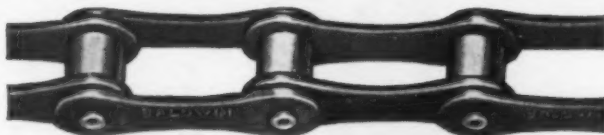
(Please turn to page 266)

our

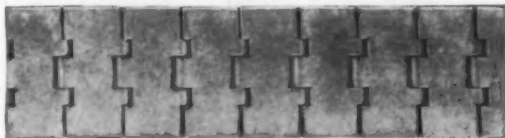
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BALDWIN-REX ROLLER CHAIN, available in a complete range from 1/4-inch to 2 1/2-inch pitch for high speed power transmission and timing.



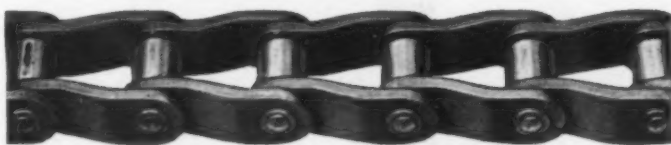
BALDWIN-REX DOUBLE PITCH ROLLER CHAIN for economical power transmission and conveying under slow speeds.



REX TABLE TOP CHAIN for conveying bottles, jars, cans, packages, small parts where smooth transfer and cleanliness are required.



REX PINTLE CHAIN, a drive and conveyor chain used where long life due to greater bearing area is needed.



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Furthermore, when you specify Rex or Baldwin-Rex Chains, you are assured the highest quality product money can buy. Over 50 years of chain-making experience are behind every strand. Every design has one or more exclusive features found in no other make. The Chain Belt Field Sales Engineer is anxious to give you the complete story. Call him or mail the coupon.

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Frames, Metal Cutting Band Saw Blades
and Clemson Lawn Machines.

1081A

CLOSED END CMP WILL PINCH SMALL STEEL USERS IN FOURTH QUARTER

Under the closed-end Controlled Materials Plan, 23 percent less steel will be supplied to industrial steel warehouses in the fourth quarter than the average of their receipts during the first two quarters of the year, predicts Walter S. Doxsey, president, American Steel Warehouse Association, Cleveland, Ohio.

This shrinkage in distributor's steel tonnage, he states, will be felt most keenly by small manufacturers, many of whom are striving to execute defense contracts; but all industry, utilities and armed forces that frequently need small lots of steel in a hurry will be harassed by these severe cut-backs before the end of the year according to Doxsey.

Under regulations of the National Production Authority steel mills are required to give their warehouse customers not less than 85 percent of shipments made to them during the first nine months of 1950. This formula will provide 1,373,100 tons of industrial steel products for warehouse distribution in the fourth quarter, as it has during other quarters of 1951. During the first half of 1951, when set-asides and directive tonnages took but a third of the available steel, producers had considerable quantities of "free steel" and warehouses got an average of 411,200 tons of "free" industrial steels in the first and second quarters over and above their quota or minimum tonnage. Average total shipments to industrial steel warehouses per quarter this year have been 1,784,300 tons. These figures are based upon latest statistical reports of the American Iron and Steel Institute.

Inventories of representative warehouses in all parts of the United States that report regularly to the Association apparently have reached a minimum. Taking stocks of industrial steels on September 1, 1949, as 100 percent, inventories fell steadily to 39 percent on May 1, 1951, and have remained at this level since that date.

Shortages of industrial steels among warehouses, now severe, will become critical before the end of the year, Doxsey believes. Companies with defense contracts are currently combing warehouses in wide areas in their efforts to obtain essential odd lots of steel. Small manufacturers, no longer able to get their steel from distributors, are buying exorbitantly priced offerings to keep their plants running. In this manner, many of these little fellows have had to acquire inventories far in excess of their requirements and have thus jeopardized their cash positions, according to Doxsey.

Scant inventories and inadequate replenishments of warehouse stocks may also have a most disturbing effect upon mill production schedules in the fourth quarter. Small consumers that normally buy from day to day, now unable to obtain their steel from warehouses, have

(Please turn to page 268)

ORDERS

filled immediately
on
Machine, sheet
metal and cap
screws, carriage
and machine
bolts

Every purchasing agent knows the importance of dependable sources for parts. Slow shipments cost time and money. Schwartzman concentrates on rapid, accurate fulfillment of all orders anywhere in the United States.



FREE catalog will be sent on standard items to make ordering easy. Consultation service available on "special" items.

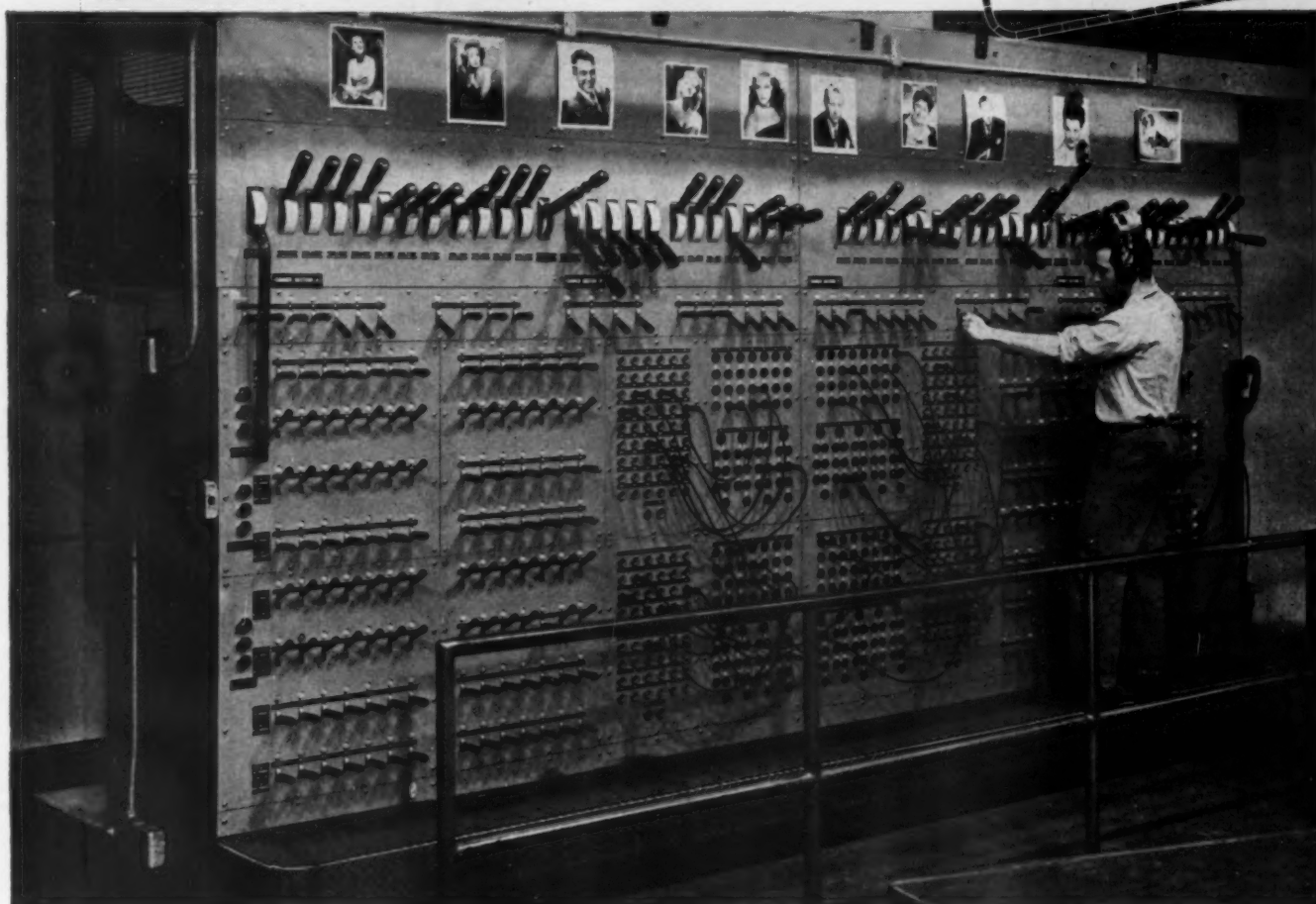
A few choice territories still open for distributors.

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FEDERAL NOARK
MEANS
BUSINESS!



One of the new C. B. S. Switchboards . . . totally dead front for safe operation.

POPULAR SHOWS! Finest sets and costumes! Brilliant acting! You can have all these . . . but to put them across to the TV audience requires a stage lighting system of unlimited flexibility and velvet-smooth performance. To ensure this all-important lighting efficiency, Columbia Broadcasting System has installed Federal Noark Control Switchboards in its New York City studios.

Designed and built in one month

C. B. S. required switchboards with large capacity to permit pre-arrangement of lighting effects for a number of different sets. Each new switchboard, accordingly, controls 200 lighting circuits, any one or any group of which can be connected to any of 40 dimmers. All switches, of course, are of the

silent-acting type . . . Important to C. B. S., Federal Noark designed and built these special switchboards within a month of receipt of order.

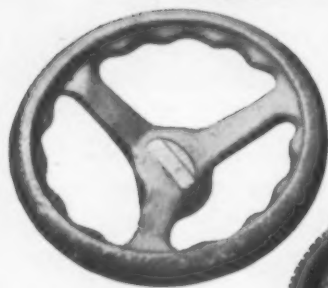
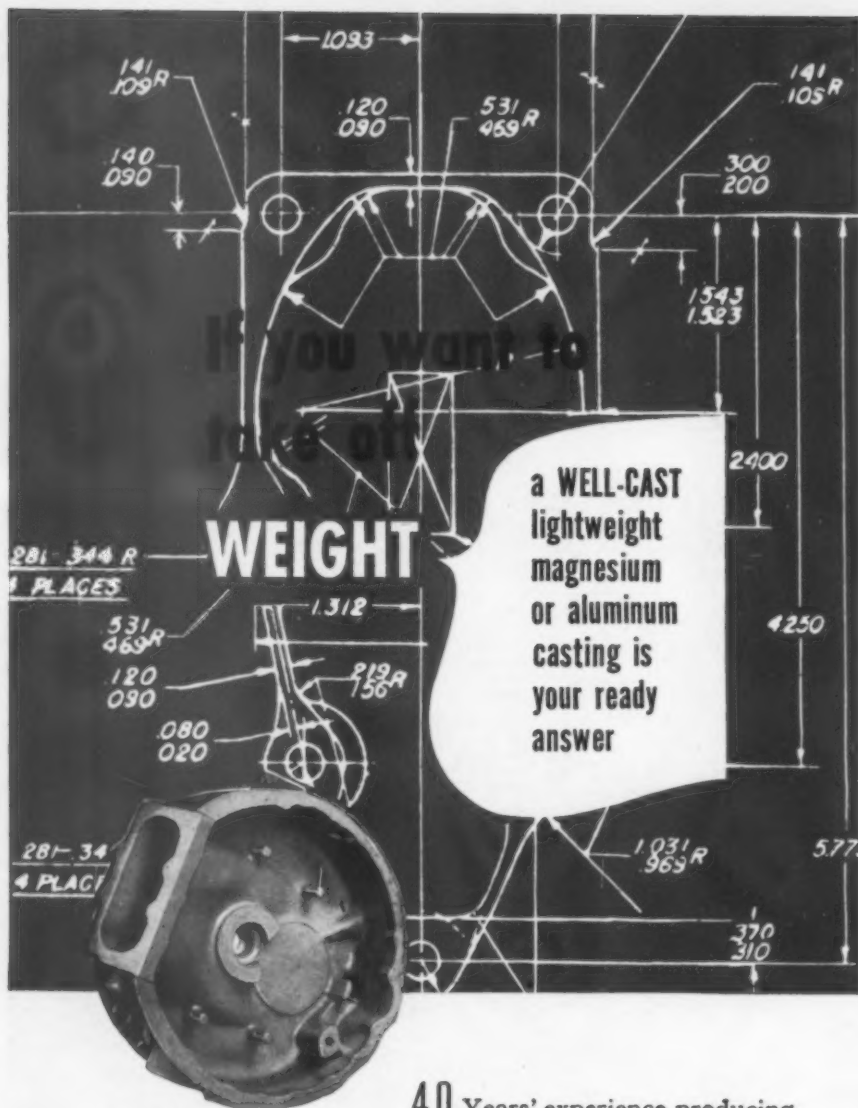
A full line of control equipment

For motion picture houses, theatres, clubs, auditoriums, schools, churches, recreation centers — wherever lighting effects must be regulated — Federal Noark switchboards and controls are tops. Likewise, throughout the whole range of electric control equipment, a host of unique developments has brought huge demands for Noark products. In a few short years, Federal Noark has become one of the largest designers and manufacturers in its field. Federal Electric Products Company, 50 Paris Street, Newark 5, N. J.

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Complete line of Federal Electric Products includes Motor Controls, Safety Switches, Service Equipment, Circuit Breakers, Panelboards, Switchboards, Control Centers, Bus Duct ★ Sales offices in principal cities.





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(Continued from page 266)
been calculating their requirements for the last three months and have been trying to place CMP orders with the mills for direct shipment of these relatively small quantities. If mills have to handle all of these small requirements which usually are serviced from warehouse stocks, serious disruptions to production schedules are anticipated with resultant declines in total output.

The total production of industrial steels—not including merchant products—during the first six months of 1951 was 26,400,000 tons. This compares with 22,200,000 during the same period of 1950. Nevertheless, Mr. Doxsey points out, allotments to distributors are based upon shipments made to them during the first nine months of 1950 and under the directive applicable in the fourth quarter of this year they will get but 85 percent of such shipments. Furthermore, in the first six months of 1950, warehouses received 14.40 percent of the total production of these industrial steels while during the first half of 1951 this percentage declined to 13.5 percent, and during the fourth quarter of this year it will drop considerably under this point.

Since under full CMP control all steel will be supplied only on users' authorizations, whether shipped by the mill or from the warehouse, the fundamental problem, Doxsey states, is not so much how many tons shall go to distributors as what proportion of the total output of each product shall be readily available in small lots for prompt delivery. Experience establishes the fact that for each product the percentage of the total that should reach consumers through warehouses remains fairly constant. Diversion of steel away from distributors to increase direct mill shipments only multiplies the hardships of all users, both large and small. It does not provide any additional steel.

Consequently, Doxsey advocates the resumption of historic patterns of distribution for industrial steel products.

8 MILLION BARREL DAILY OIL OUTPUT FORECAST BY 1955

Crude oil productive capacity in the United States can average close to 8 million barrels a day in 1955, according to the Petroleum Administration for Defense.

This forecast is based on several different methods of calculation including a new "productivity trend" analysis developed by PAD.

Production of crude oil this year is averaging approximately 6.8 million barrels a day.

It is assumed that drilling can and will be continued at about the 1951 rate and that about 43,400 wells will be completed annually over the next five years.

These estimates are a result of a recently prepared study by the PAD entitled "Forecasting Crude Oil Productive Capacity."

(Please turn to page 270)

controlled or not...

**CMP
THINSTEEL**

**gives you
more parts
per pound**

CMP'S special high precision mills insure exceptionally-close thickness tolerances and across-the-width gauge uniformity in THINSTEEL.

With oversize variation kept to the minimum you are assured more footage — as much as 175 square feet per ton in lighter gauges — as compared with a standard commercial product.

**BOTH WERE ORDERED 3/4" x .015".
BOTH WEIGH 1/2 OUNCE.**

The tagged piece is precision rolled THINSTEEL and is slightly over 9 1/2" long. The other is ordinary strip on the high side of the allowable gauge tolerance — .002" oversize — and is slightly less than 8 1/2" long.



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Up a Tree?

Not enough hours in your day? Here's a handy slide-chart to make your job simpler and save valuable time! This FREE chart instantly identifies A-N Nos. pertaining to stainless steel nuts, screws, bolts, rivets, cotter pins, washers; gives sizes, other data. Write for your FREE copy of Chart 5IP TODAY!



Anti-Corrosive

AN STAINLESS STEEL FASTENING SELECTOR

In listing below, find AN number and note kind of fastening. Then, in proper window, set AN number and read data.

NUTS

NUMBER	NOM. SCREW SIZE	THD. PER IN.	CAT. PAGE
AN 310 C18	1-1/8	12	22

Prices and deliveries on request

SCREWS

NUMBER	NOM. SCREW SIZE	THD. PER IN.	CAT. PAGE
AN 501 C1	#1	72	11

Last DASH NO indicates length in sixteenths inch.

See other side for RIVETS, COTTER PINS, WASHERS

AN3 to AN20 Hexagon Head, Fine Thread, Class 3 Fit Aircraft Bolts with hole drilled in shank
 C-Corrosion Resisting Steel (Stainless Steel) to Spec. AN-QQ-S-770, Condition QT, Class II (Type 431).
 H-Indicates drilled hole in head of Bolt
 A-Indicates no drilled hole in shank of Bolt
 Last Dash No-Refer to drawing for length of Bolt

Number	Size	Thd./In.	Number	Size	Thd./In.
AN3	10	32	AN7	7/16	20
AN4	1/4	28	AN8	1/2	20
AN5	5/16	24	AN9	9/16	18
AN6	3/8	24	AN10	5/8	18
			AN12	3/4	16

AN310 Castellated Nuts, Fine Thread, Class 3 Fit
 AN315 Hexagon Plain Nuts, Fine Thread, Class 3 Fit
 AN316 Hexagon Double Chamfered, Double Countersunk Check Nuts, Fine Thread, Class 3 Fit
 AN320 Hexagon Shear Nuts, Fine Thread, Class 3 Fit
 AN340 Machine Screw Nuts, Coarse Thread, Class 2 Fit
 AN345 Machine Screw Nuts, Fine Thread, Class 2 Fit
 AN381 Corrosion Resisting Steel Cotter Pins to Spec FF-P-386a, Amendment 2, Type C (Type 302)
 AN427 100° Flat Counter sunk Head Rivets
 A-Type 302 or Type 304 annealed, Coarse Thread, Class 2 Fit

Anti-Corrosive

Metal Products Co., Inc.

Manufacturers of STAINLESS STEEL FASTENINGS

CASTLETON ON HUDSON, NEW YORK

COLOR-SOUND MOVIE TELLS STORY OF ALUMINUM

Revised and brought up to date with the advancing uses for aluminum, full color and sound picture on 16mm film, "Pigs and Progress", presenting in simple language a complete non-technical story of aluminum, is available for loan without charge from the Motion Picture Department, Reynolds Metals Co., 2500 So. Third Street, Louisville 1, Ky.

This movie requires 26 minutes for showing. Beginning with the mining of bauxite in the company's own mines, the scenes shift to its alumina mill at Hurricane Creek, Ark., where the bauxite is converted into alumina, a pure white granular material resembling sugar. The alumina is then shown being electrically reduced at the Jones Mills, Ark., reduction plant, to metallic aluminum. Also shown are the mill operations involved in converting aluminum ingot to sheet, plate, wire, rod, bar, electric cable, aluminum powders and pastes, rolled and extruded shapes. In addition to the production of aluminum, the picture reveals how it is fabricated into many items, the production of aluminum foil, and the production of aluminum pigment for use in paints and other protective coatings.

OPEN-TOP RAIL COAL-CAR SHORTAGE FEARED

Reporting that the loadings of railroad open-top cars used to transport coal, ore, and other strategic materials increased substantially in the second quarter of 1951, Defense Solid Fuels Administrator Charles W. Connor warned that the railroad open-top car situation may become precarious this fall and winter.

Mr. Connor said that open-top car loadings in the second quarter of 1951 averaged 405,230 a week, as compared to 370,110 in the same period of 1950 and 341,077 in the first quarter of 1951.

Would Create Problem

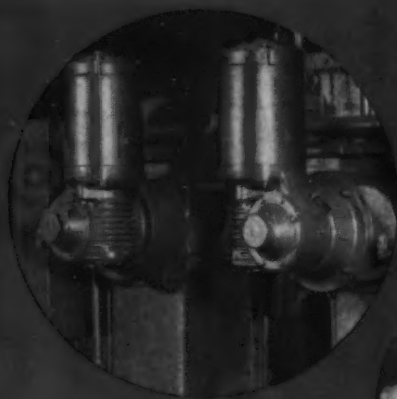
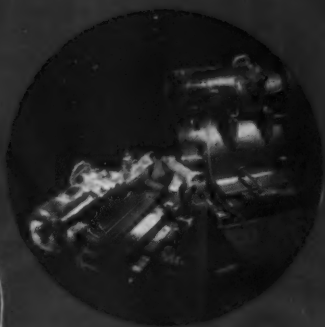
Since serviceable gondola and hopper cars now total only about 790,000 average loadings of 500,000 cars a week for the balance of the year could create a serious open-car situation, considering that average turn-around time for the cars is about 10 days, Mr. Connor asserted.

The DSFA Administrator said it was expected that the rate of increase in open-top car loadings noted in the second quarter would continue in the October to December period, when a demand for loading as many as 534,000 cars a week might be reached.

Adequate Supply Vital

An adequate open-top car supply is vital to the coal industry since day-to-day production is limited by the availability of cars at the mines, Mr. Connor pointed out.

Mr. Connor emphasized that this situation underlined the importance of the summer fuel buying program called for (Please turn to page 272)



Time and money saving ideas of how you too can take advantage of Master's unusual ability to provide the RIGHT horsepower, the RIGHT shaft speed, the RIGHT construction features, the RIGHT mounting . . . all combined into one compact power package.

Don't put up with make-shift assemblies when you too may be enjoying these advantages. Master Motors, available in thousands and thousands of types and ratings (up to 150 HP) give you a selection you can get nowhere else.

Open, enclosed, splash-proof, fan-cooled, explosion-proof . . . horizontal or vertical . . . for all phases, voltages and frequencies . . . in single speed, multi-speed and variable speed types . . . with or without flanges or other special features . . . with 5 types of gear reduction up to 432 to 1 ratio . . . with electric brakes . . . with mechanical variable speed units . . . and for every type of mounting . . . Master has them all and so can be completely impartial in helping you select the one best motor drive for YOU.

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this may give you ideas

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DAYTON 1, OHIO**



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"WHITE-TAPE"
IN 6 FT. • 8 FT. OR 10 FT. LENGTHS



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the best **WHITE TAPE** made at the lowest price yet

Snow-white blade with bold, legible, jet-black numerals and graduations. Graduated in 32nds for first 6 inches.

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Underside is white too. Mark with ordinary pencil, remove mark with flick of thumb.

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Check these list prices:
10-ft. \$1.49 8-ft. \$1.19 6-ft. 98¢

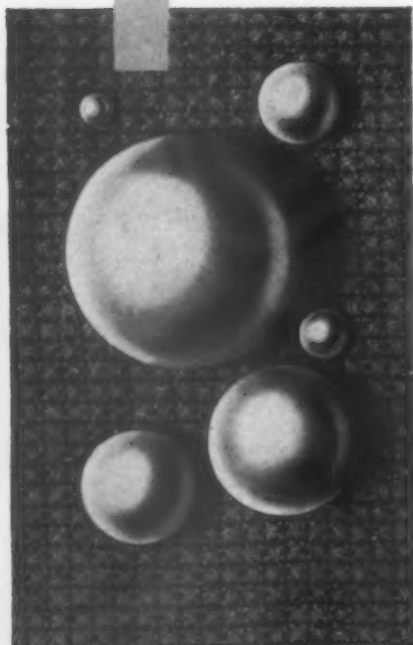
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Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.

Strom STEEL BALL CO.
1850 So. 54th Ave., Cicero 50, Illinois

Largest Independent and Exclusive Metal Ball Manufacturer

(Continued from page 270)

by Secretary of the Interior Oscar L. Chapman and supported by Defense Mobilization Director Charles E. Wilson and Defense Transport Administrator James K. Knudson.

Balance Disturbed

Mr. Connor warned that sharply increased tonnages of strategic materials, which are expected to be moved in the same type of equipment, may disturb the precarious balance now existing between serviceable coal cars and productions.

The Solid Fuels Administrator added it is estimated that the tonnage of all such commodities to be transported will require an increase in open-top car ownership by 150,000 cars in 1952 to prevent the development of a critical shortage in this class of equipment.

1 1 1

POWER FACTOR VISUALIZER
AVAILABLE FROM WESTINGHOUSE

A power Factor Visualizer that presents a simple explanation of the use of capacitors in solving low power factor problems is available from the Westinghouse Electric Corporation. Prepared in the form of a slide-rule-type chart, the visualizer makes it possible to follow a hypothetical case involving low power factor and shows how the installation of capacitors can solve this, as well as many similar problems.

The chart explains just what low power factor is, what it means to both the power user and the power supplier, and what benefits can be obtained by improving the power factor in the industrial distribution system through the installation of capacitors.

In connection with power factor improvement, capacitors will provide these benefits: greater capacity from existing electrical systems, better voltage conditions, improved motor performance through increased voltage, lower current and reduced line losses, decreased transformer losses, and more effective use of lighting equipment through higher voltage.

For a copy of the Power Factor Visualizer (SA-6739) write the Westinghouse Electric Corporation, Box 2099, Pittsburgh 30, Pa.

1 1 1

PRICE REDUCTIONS ON
LARGER DIAMETER ROLLPINS

Price cuts of 37 per cent to 73 per cent on larger diameter Rollpins have been announced by the Rollpin division of Elastic Stop Nut Corporation of America, Union, New Jersey, according to E. F. Nason, general sales manager. The reductions, which complete price revisions on the 300 standard stock products of the division began nine months ago, have been included in a price list covering the entire line sent to industrial purchasing agents throughout the country. The list reflects the previous as well as the latest price revisions.

(Please turn to page 274)

Timely Facts and Features You'll Find in the NEOPRENE NOTEBOOK

- how you can reduce maintenance costs
- ways to solve many production problems
- new ideas on neoprene's wide range of uses
- technical help in specific applications
- details of new improvements in old products
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YOU'LL FIND PROFITABLE READING in every issue of the Neoprene Notebook. Informative, up-to-the-minute articles on neoprene's properties, performance, and new neoprene products help you step up production efficiency and cut expenses. The feature articles in the two issues shown here are good examples of the authoritative reports that appear regularly. Pictures, graphs and charts make for easy, thorough understanding. Each issue is packed from cover to cover with new ideas to save you time, and money. Put your name on our mailing list. Subscriptions are FREE.



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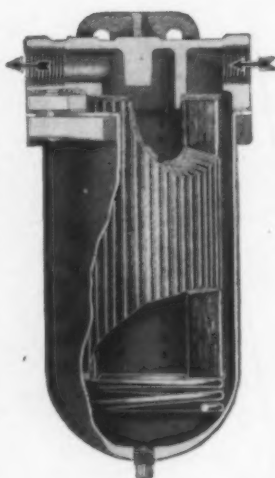
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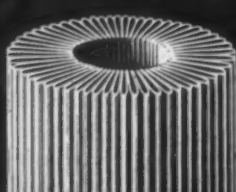
Model 3110-P filter element, $6\frac{1}{8}$ " x $3\frac{1}{2}$ ", has a filtering area of 940 sq. in.



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COURT HALTS INFRINGEMENT ON WELDTEX PLYWOOD PATENT

The Federal Court for the Southern District of California has approved a decision between the parties only a final consent decision upholding the validity of the Deskey "Weldtex" patent owned by United States Plywood Corporation, and enjoining defendant plywood companies from infringing on these patent rights, it was announced recently by James M. Heilman, director of United States Plywood's patent division.

The sixteen defendant companies, which include Zeesman Plywood Corporation, American Plywood Co., Zero Plywood Corporation and Back Panel Co., have already received permanent injunctions halting them from manufacturing or selling various types of grooved plywood made by an embossing, cutting or pressing process, and from using the trade mark, "Zeetex", "Venetex" and "Combwood".

The judgment also requires the various defendants to assign to United States Plywood their respective trade mark rights to "Zeetex", "Venetex" and "Combwood".

A preliminary injunction was issued by Judge Peirson M. Hall on June 16, 1949, restraining Zeesman Plywood Corporation, American Plywood Co., and others from manufacturing or selling grooved plywood formed by cutting the grooves, known as "Zeetex". On March 1, 1950, a preliminary injunction issued by Judge Hall also halted Zero Plywood Corporation, Back Panel Co., and others from manufacturing or selling various types of grooved plywood made by an embossing or pressing process, and from using the trade mark "Venetex".

Counterclaims of certain defendants for alleged violation of the Anti-Trust Law and the Robinson-Patman Act by United States Plywood were dismissed with prejudice to the defendants.

HINGED STEEL BELTING MECHANIZES SCRAP REMOVAL

The installation of a 236-foot run of hinged-steel conveyor belting has eliminated manual scrap removal from a line of nine 250-ton punch presses at the Midland Steel Products Co., Cleveland, Ohio. The highly abrasive sheet steel scrap passes down a chute from each machine onto the belting which is driven by a variable speed drive at a rate of 20 to 40 feet per minute, depending upon the number of presses in operation. The belting feeds the scrap into an alligator shear which cuts it into 6 to 10-inch long pieces for better packing. To assure continuous scrap handling, the speed of the shear is synchronized with that of the belt. A 21-foot inclined unit transports the cut scrap out of the building for car loading. The installation utilizes 36-inch wide belting with solid steel links of 6-inch pitch length size. Complete information in regard to the installation is available from May-Fran Engineering Inc., 1721 Clarkstone Road, Cleveland 12, Ohio.

(Please turn to page 276)

Drilling Problem?

**Black & Decker's Drill Line
is a good bet to solve it!**



Completeness of Line, Quality Construction Pay Off for Users!

FOR drills to fit your needs—for top performance on any portable drilling job—it pays to check Black & Decker *first!* That's because Black & Decker gives you an unmatched choice of Drill models. Capacities from 1/4" to 1 1/4"—choice of handle arrangement for easiest operation—choice of speed, power and price in most capacities. And it's also because Black & Decker Drills give you powerful B&D-built motors—full ball-bearing construction—extra-tough gears, shafts and chuck spindles—husky housings, streamlined design, perfect balance.

Whether your problem is in production, maintenance or construction—whether it requires large

or small drills—see your nearby B&D Distributor *first* for expert help. And write today for free, detailed catalog to: THE BLACK & DECKER MFG. CO., 664 Pennsylvania Ave., Towson 4, Maryland.

LEADING DISTRIBUTORS EVERYWHERE SELL



Black & Decker
PORTABLE ELECTRIC TOOLS

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The SAFETY OF ALLEN-HEAD SCREWS SAVES YOUR TIME



There's safety in positive, non-slip driving, weld-like grip under vibration and stress and absence of protruding heads. These features protect your own employees, the product you make and the people who use it. Allen-Head screws and keys help keep both men and machines on the job.



NYLON AS A BEARING MATERIAL

Du Pont FM 10001 is becoming widely recognized throughout industry as an excellent bearing material, according to Thomson Industries, Inc., Manhasset, N. Y., who state that it performs better than any other known material under adverse lubricating conditions, or with no lubricant at all. It is tough, resilient, and highly resistant to abrasion. It can stand temperatures in excess of 250 deg. F. and is unaffected by most ordinary industrial chemicals. The tough glazed surface which develops on Nylon results in extremely low friction coefficients with a comparable low rate of wear. Also, it tends to damp mechanical vibration and provide smooth, quiet operation.

To overcome several limitations which restrict the suitability of plain injection molded or machined Nylon bearings for many applications, Thomson Industries has developed the Nylined bearing. This consists of an outersleeve of inexpensive metal and a relatively thin lining of Nylon bearing material. The liner is retained in the sleeve in a manner which will permit it to expand and contract circumferentially around the inner periphery of the sleeve. The liner is provided with a narrow slot, or compensation gap, which interrupts the circumference. In applications where lubricants can be used, one or more annular grooves are provided on the inside of the outer sleeve to form storage wells for grease or other lubricants which are evenly distributed through the compensation gap.

The Nylined bearings are said to present no cold flow or creep problems, and there is no danger of seizure due to stress deformation. The bearings can be furnished in the plain sleeve type or the flange type. Since they can be quickly fabricated to special dimensions without expensive or elaborate molds or dies, they can be furnished on a custom basis, designed expressly for each application.



EMERY ANNOUNCES NEW AIR PROCUREMENT SERVICE

Emery Air Freight Corporation, high speed air carriers, today announced an entirely new service for purchasing agents and procurement men in all categories of business. Described as "an extension of the purchasing agents own expediting staff", Emery's new Air Procurement Service is said to eliminate many of the detailed steps heretofore necessary in expediting incoming shipments from vendors and suppliers. Emery makes no extra charge for the service.

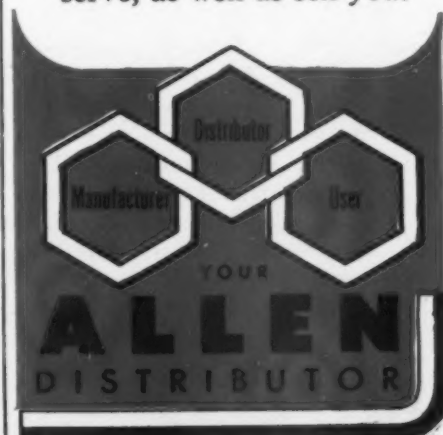
The new Air Procurement Service draws upon the full resources of Emery's nationwide organization. In any locality, the purchasing agent simply telephones his purchase order number and vendor's name to his local Emery office. Thenceforth, this information is conveyed via private wire to the Emery agent in the vendor's city who contacts

(Please turn to page 278)

Your ALLEN-HEAD DISTRIBUTOR'S KNOW-HOW SAVES YOUR TIME



He does more than carry the fullest possible stock for promptly filling your needs. He has a wealth of data at his finger-tips on the applications and correct use of precision screws, dowel pins and pipe plugs. He wants to serve, as well as sell you.



It's more than the
Best Paint on the
Market...



It's the Best Paint On the Wall!

There's only one true way to test the real quality and value of a paint. It's the *on the wall* test . . . the simple, inexpensive test that tells you, *in advance and in no uncertain terms*, what a paint will do and what it will cost to do it.

All you do is take a gallon of Barreled Sunlight and a gallon of any other good paint. Thin each according to the directions on the cans. Then cover test areas with each paint . . . measuring the square feet covered by each, comparing the hiding properties of each and — because labor represents a good 80% of the cost of any paint job — carefully check the time involved in applying each.

We'll wager dollars to doughnuts that in such a test Barreled Sunlight proves best. Yes, best in performance *on the wall* . . . tops when it comes to giving you a better looking, longer lasting paint job at the lowest possible cost!

Talk it over with our representative. He'll pay a friendly and constructive call at your request. Write today.



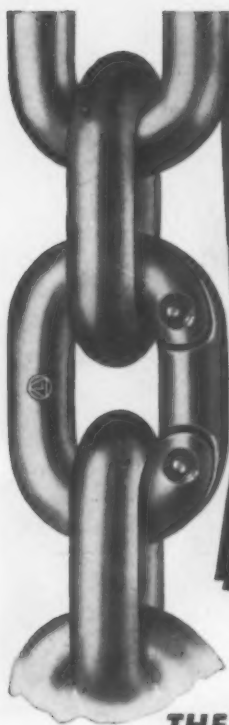
BARRELED SUNLIGHT PAINT COMPANY, 18-J Dudley St., Providence, R. I.

Barreled Sunlight *Paints*

In whitest white or clean, clear, wanted colors,
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IT ALWAYS COSTS MORE NOT TO PAINT!

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- LOCKS ON IN A JIFFY
- COSTS LESS THAN WELDING
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THE LAUGHLIN "MISSING LINK" WITH INTERLOCKING SAFETY LUGS

Makes Your Chain Stronger Than Ever!

To attach a "Missing Link" you simply insert the halves through the links to be joined, fit the rivets into the rivet holes, then peen the rivets to fill the countersunk holes. And once on, the pressure-matched *interlocking lugs* take all the load—with no strain on the rivets.

Add the fact that drop-forged, heat-treated "Missing Links" are made stronger than proof coil chain to begin with, and you'll see why these time- and money-saving repair links give you a stronger, safer chain

than you ever had before! . . . Laughlin "Missing Links" are available in all sizes from 3/16" to 1 7/8" at your mine, mill or oil field supply house.

Free! Catalog-Data Book

Tells you how to select the *right* wire rope and chain fitting for every job. Complete specifications—helpful tables. Use the coupon below.



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THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



(Continued from page 276)

the vendor within minutes, picks up the shipment, places it on the first and fastest plane for destination and teletypes instructions to other Emery expeditors enroute.

Thus alerted, Emery's network follows every step of the trip with wired progress reports, personal handling at transfer points to avoid congestion and delays, and, at the receiving end, makes personal delivery to the purchaser.

Emery claims that the new service, perfected after many months of careful study and testing, lops many hours and sometimes days from the delivery times formerly required for vital materials, component parts, and supplies of all kinds.

In announcing the new service, Mr. H. J. Snyder, Vice President and General Manager of Emery Air Freight Corporation, said today: "The new Air Procurement Service is the result of a long standing need among purchasing agents everywhere. Particularly now in the face of increasing bottlenecks, scarcities, and shipping congestion, hard pressed purchasing agents have acclaimed this new idea as a tremendous saving in their time and effort."

RECORD BREAKING STEEL PRODUCTION CREATES CRITICAL SCRAP PROBLEM

Aimed to help increase the current dangerously low iron and steel scrap inventories in this country, the National Production Authority, U. S. Department of Commerce, is distributing a booklet, "Scrap for Steel Mills and Foundries for Defense," to more than 200,000 executives of business, industry and trade associations.

In a foreword to the booklet, DPA Administrator Manly Fleischmann says, "I don't believe we are confronted with a more critical problem than the iron and steel scrap recovery program."

The booklet emphasizes that record-breaking steel production and large scale expansion of production capacity has reduced scrap inventories of mills and foundries to a new all-time low, with some plants having only a few days scrap supply on hand. If the nation is to achieve its 1951 goal of 110,000,000 tons of steel ingots and castings, 36,000,000 tons of purchased heavy industrial scrap must be found, the booklet says.

Following is the program outlined in the booklet for the recovery of dormant scrap:

1. Go after dormant scrap—Start an emergency inspection and inventory of all heavy steel, whether machines, equipment, beams, or plates. Dispose of everything you possibly can to a scrap dealer.

2. Appoint someone with authority—It is extremely important that the top executive of every industrial and commercial establishment, large and small, appoint someone with authority to clean out dormant scrap and to be responsible for a continuous good-housekeeping job.

3. Salvage committee—In large industrial firms the chief executive should

(Please turn to page 280)

take a **CLOSER** LOOK at



for:

- 1 Mechanical and pressure tubing.
- 2 Seamless and welded tubing.
- 3 Hot-finished, cold drawn or cold rolled, and rocked tubing.
- 4 Wide choice of grades: Stainless steels—B&W Croloys 12 to 27; Intermediate chrome molybdenum alloys—B&W Croloys 1/2 to 9; SAE-AISI alloys and nitralloy steels; Nickel steels—B&W Nicloys 3 1/2, 5, and 9; Carbon molybdenum steels.
- 5 Sizes up to 95/8" OD in full range of wall thicknesses.
- 6 Wide choice of surface finishes—as rolled, as drawn, turned, scale-free, and polished.
- 7 Unannealed, annealed, tempered, and normalized conditions, or otherwise heat-treated as required.
- 8 Round, square, rectangular and other shapes; special ends and lengths.

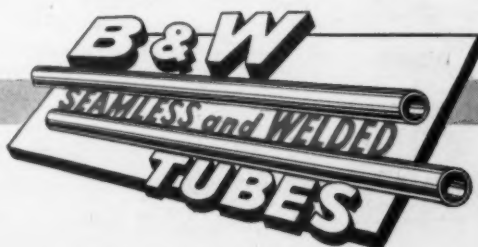
THE BABCOCK & WILCOX TUBE COMPANY

Executive Offices: Beaver Falls, Pa.

General Offices & Plants

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

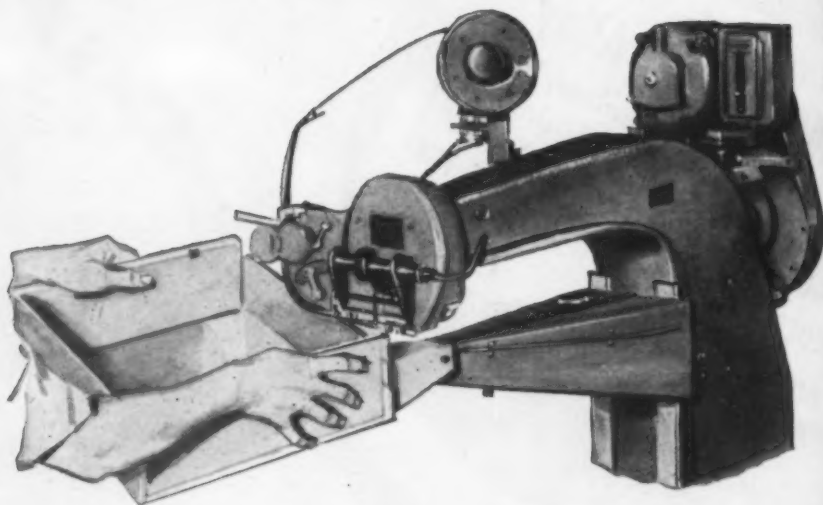
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Philadelphia 2, Pa. • St. Louis 1, Mo. • San Francisco 3, Calif.
Syracuse 2, N. Y. • Toronto, Ontario • Tulsa 3, Okla.



TA-1637G

How to save time and money with

new way of fastening almost any material to various metals



"A penny saved is two pence clear."

—Ben Franklin's Almanac, 1757

Today there's no need to take fastening or assembly costs for granted.

In many cases you can do away with expensive rivets, screws, nails, bolts or spot welds to fasten metal either to metal or to other materials.

You can do the same job—and do it both faster and better—with an Acme-Morrison Metal Stitcher.

You can stitch various combinations of steel, brass, copper or aluminum to each other or to such materials as wood, felt, cork, canvas, leather, rubber, fibre, plastic, asbestos—there are too many combinations to mention them all.

Many manufacturers have checked with us and found that Metal Stitching saves them materials and labor costs, speeds assembly time, and improves their finished products.

Surely it's worth looking into! Just send in the coupon below for your free copy of our new 12-page booklet!

ACME STEEL COMPANY

2840 Archer Avenue, Chicago 8, Illinois

Steel Strapping — Stitching Machines and Wire

Venetian Blind Slat Stock — Corrugated Fasteners — Strip Steel

**ACME
STEEL**

FREE



ACME STEEL COMPANY, Dept. P-101
2840 Archer Avenue, Chicago 8, Illinois

Please send me a free copy of your new booklet, "Metal
Stitching—a new technique in fastening."

NAME _____ TITLE _____

COMPANY _____

STREET ADDRESS _____

CITY _____ ZONE _____ STATE _____

(Continued from page 278)

appoint a salvage committee with authority to make decisions. The committee should—

a. search all plants and properties, regardless of size, for dormant scrap such as obsolete machinery, tools, jigs, dies, and other equipment, including items that are broken, dismantled, worn beyond repair, abandoned, or in need of parts that can no longer be obtained;

b. survey potential wrecking and dismantling projects that will produce scrap;

c. make disposition of all production and dormant scrap as quickly as possible.

4. Put scrap collection on a "house-keeping" basis—Besides increasing the supply of iron and steel scrap, continuous scrap recovery from questionable old standbys, obsolete machines and equipment reduces taxes through inventory write-off, improves safety conditions, gives lowered insurance rates, and clears valuable space. Make it the personal responsibility of the committee chairman to initiate a program that will clean out the dormant scrap from the plant. It is suggested that the committee make surveys not less than every 30 days. Make your permanent salvage program a top-management responsibility.

"Dormant" scrap is defined as obsolete machinery and equipment, tools, jigs, dies, and fixtures, including items that are broken, worn beyond repair, dismantled, abandoned, or in need of parts that are no longer obtainable.

The booklet lists the groups taking part in the scrap recovery program. Industrial and commercial firms, entire industries such as the railroads, petroleum and auto wreckers, industrialized cities, federal government agencies and trade associations have already established Salvage Committees and programs. The Chambers of Commerce have assisted in organizing more than 800 local scrap mobilization committees of leading industrialists and business men.

After the harvest season, farmers and ranchers will search out scrap from their farms and barns.

Governors of 48 states and the territories have also appointed scrap collection committees to conduct state, county and municipal programs.

NPA emphasizes that this is not the house-to-house type of scrap campaign carried on in World War II. It is, rather, directed at those business and industrial executives who have the authority to determine what can be scrapped, order the disposal through normal channels and arrange to have obsolete equipment written off.

BOOKLET ON STATISTICAL QUALITY CONTROL

Useful booklet illustrating a few representative case histories of instrument gaging and statistical quality control has been published by The Sheffield Corporation, Dayton 1, Ohio. A copy may be had free of charge by writing to the company.

(Please turn to page 284)

Strapped...Ready for shipment!



Tape it with Behr-cat



THIS EXTRA STRONG, filament reinforced, pressure-sensitive strapping tape is specifically designed to improve industrial packaging. Its light weight makes it especially suitable for air freight. And shipping departments save time and costs with quick application and easy handling. **BEHR-CAT** strapping tape is a big improvement over the old steel band method of packaging and eliminates the danger of wire snapping, handling-cuts, etc. It holds wooden or metal objects securely without scratching or damaging edges. Use **BEHR-CAT** strapping tape for sealing cartons, wrapping wire coils, tubes, plate glass and banding metal parts. Order a supply from your distributor or write direct.

YOUR SPECIAL TAPE PROBLEM

is welcomed at **BEHR-MANNING**. Our fully staffed laboratories are completely at your service. Put us to the test. Write us today. Address Dept. P-10.



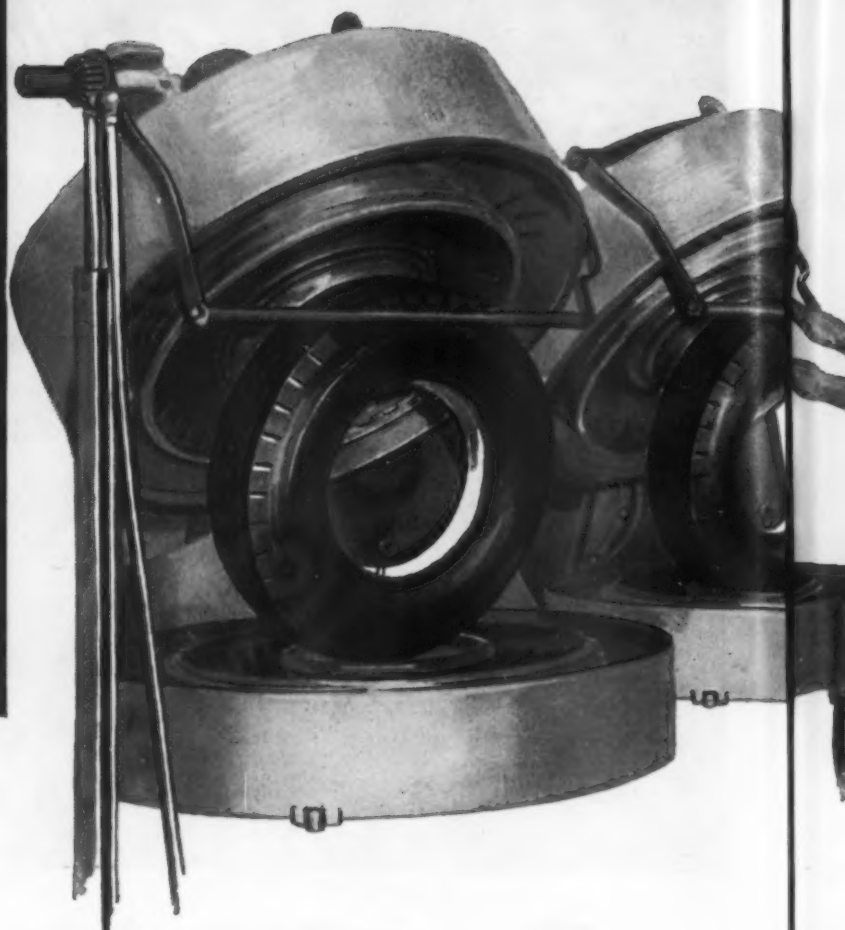
BEHR-MANNING

division of **NORTON** Company

- ▲ COATED ABRASIVES
- ▲ SHARPENING STONES
- ▲ PRESSURE-SENSITIVE TAPES

Main Office and Plant: Troy, N. Y.
Canada: Behr-Manning (Canada) Ltd., Brantford, Ont.
Export: Behr-Manning Overseas, Inc., New Rochelle, N. Y.

FACTS about ANILINE



Today aniline is used extensively in many industries. Aniline is utilized in the manufacture of hydroquinones which are essential to the photographic and rubber industries. Aniline is an important ingredient in the anti-aging compounds used by rubber manufacturers to increase the life of rubber products. As a valuable intermediate, aniline is vital to the production of various dyes and pharmaceuticals, such as indigo, phenylhydrazine, acetanilid, acetoacetanilide. Also it is used in aniline-formaldehyde type resins which exhibit excellent electrical properties.

Despite current shortages of this material, Dow is extremely interested in helping you utilize aniline to best advantage in your manufacturing processes. Dow will gladly cooperate with you if you desire technical assistance or further information about the economical use of aniline. Write to Dow, using the coupon at right.

HANDLING



Aniline is commonly stored in plain steel tanks. These tanks should be vented to a safe place. Although there is no particular fire hazard involved, it is advised that vents should be equipped with flame arrestors. It is also good practice to ground all equipment in which aniline is used.

If possible, it is advisable to use aniline in closed equipment only. When this is not possible, suitable ventilating equipment must be installed. A down-draft exhaust is indicated since aniline vapors are heavier than air.

Properties and Specifications of Aniline

Aniline is a practically colorless, highly refractive, oily, poisonous liquid with a characteristic odor. It tends to darken on exposure to air or sunlight but remarkably little color change occurs if aniline is stored properly.

Freezing Point, °F.....	21
Boiling Point, °F.....	364
Flash Point, Open Cup, °F.....	158
Specific Gravity (77°F./77°F.).....	1.021
Solubility (g/100 g.solvent)	
Water (25°C).....	3.5
Alcohol.....	∞
Ether.....	∞

SPECIFICATIONS

Boiling Range at 760 mm Hg	
IBP-DP, within.....	1.5°C.
5-95%, within.....	0.2-0.7°C.
Freezing Point, minimum.....	-6.3°C.
Nitrobenzene.....	None
Color.....	Colorless to straw

This is one of a series of Dow advertisements you may wish to keep on file for reference and information. Write Dow for reprints.



PROTECTIVE EQUIPMENT

Aniline is so readily absorbed that adequate protective equipment should be worn whenever contact is possible. This equipment should consist of a minimum of safety goggles, rubber gloves and apron, rubber shoes or boots and coveralls and underwear.

Whenever an aniline tank is to be entered it should be washed completely free of aniline and fumes. Anyone entering the tank should be provided with a proper harness and life line in addition to the previously mentioned equipment. Another individual should be watching the person in the tank from the outside at all times.

Any individual upon entering aniline equipment should be equipped with approved breathing equipment. This may consist of a positive pressure hose mask with hose inlet in a vapor free atmosphere or a self-contained breathing apparatus with stored oxygen or air. All masks and breathing apparatus should be approved by the U. S. Bureau of Mines and should be equipped with full face masks.

The precautions taken in unloading tank cars or other containers of any poisonous, flammable liquid should apply to the unloading of aniline.



TOXICITY INFORMATION

Aniline is highly toxic but it may be handled safely if proper care is taken. It is readily absorbed by the body upon contact, inhalation or ingestion. The first symptom of absorption of toxic quantities is cyanosis or blue lips. A feeling of "drunkenness" may exist for a short time followed by headache, drowsiness, nausea and vomiting. This may be followed by unconsciousness and death if exposure continues.

Toxic effects of aniline are generally acute; however, repeated exposure to low concentrations may give rise to what is called chronic aniline poisoning. However, upon complete cessation of exposure, individuals generally regain their normal health with no permanent pathology being in evidence.

FIRST AID



In the event of aniline contact, all contaminated clothing should be removed immediately and the person should be washed with large amounts of soap and warm water. All clothing should be thoroughly decontaminated before further use. In case of eye contamination, the eyes should be washed for at least 15 minutes with large amounts of flowing water. A physician should be summoned as soon as possible.

If aniline is ingested, the victim should be given immediately an emetic such as mustard and water or lukewarm soapy water. In any case mentioned previously or poisoning by inhalation, the patient should be removed from any further exposure . . . kept warm and be transported to the nearest medical attention.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

WRITE DOW FOR INFORMATION AND TECHNICAL ASSISTANCE.

The Dow Chemical Company, Dept. OC-29,
Midland, Michigan

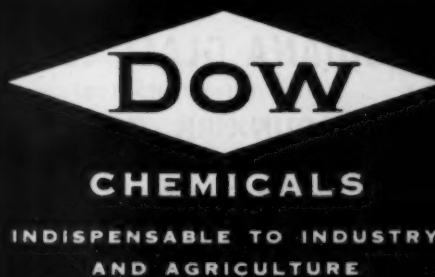
- ☐ Please send me additional information about aniline.
☐ Please send _____ reprints of this advertisement.

Name _____ Title _____

Company _____

Address _____

City _____ State _____





THE ART OF MAKING GLASS

**PRODUCTION
SCHEDULES
MAINTAINED**

Thanks to Glass!

Glass, when used as a substitute for critical metals, may enable you to keep your plant production up to capacity.

We invite you to explore the possibilities and to this end, our Design and Engineering Departments stand ready to cooperate in every possible way.

Indiana Offers a Complete Service Including

Estimating • Modeling • Designing

Mould Engineering

Hand and Machine Production

Your Inquiries Will Receive Prompt Attention

INDIANA GLASS COMPANY

ESTABLISHED 1907

DUNKIRK, INDIANA



"TRUCKER" GASOLINE FORK TRUCKS ANNOUNCED BY YALE & TOWNE

A new series of gasoline fork trucks specifically designed for operation in and around highway motor trucks and freight cars was recently announced by the Philadelphia Division, Yale & Towne Manufacturing Company. Called the "Trucker" series, the new trucks combine low weight, low overall height and high maneuverability for operation in close quarters.

Available in capacities up to 2,000 pounds, the "Trucker" is only 68" high when the telescopic lift is collapsed. In "duplex models, the truck can elevate its forks 54" before the secondary channels rise to increase the height. This is a valuable feature allowing two high stacking inside street truck bodies. The "Trucker" also features short overall length.



Short overall length and high stacking feature the "Trucker"

All controls on the new Yale fork truck are automotive type. Clutch, accelerator, gearshift, and brake are in conventional positions while controls for hoisting, lowering and tilting the forks are located in close proximity to the steering wheel. The hydraulic brakes also follow automotive practice.

The power impulses from the engine are transmitted through triple reduction spur and hypoid gears to the drive axle. The drive axle is enclosed in an oil-tight housing and is the full-floating type with involute spline drive shafts.

For further information, write for Bulletins 1306-11 to The Yale & Towne Manufacturing Company, 11,000 Roosevelt Boulevard, Philadelphia 15, Pa.

1 1 1

GAGE BLANKS COMMERCIAL STANDARD

Commercial Standard CS8-51, Gage Blanks, is announced by the Commodity Standards Division, Office of Industry, Department of Commerce, Washington, D. C. The new issue supersedes the previous edition CS8-41. The standard covers standard designs for plain and thread plug gage blanks to 12.010 in-

(Please turn to page 286)

Prove for yourself why Gates Vulco Ropes are giving you longer V-Belt Wear!

There is a very simple reason why Gates Vulco Ropes—the V-belts built with concave sides—are giving you substantially longer wear—and you can easily prove this for yourself in just 2 minutes' time!

Pick up any V-belt whatever and bend it as it bends when going around a pulley. As the V-belt bends, grip its sides with your fingers—and here is what will happen, every time.

If the belt you are bending is a *straight-sided* V-belt, you can feel its sides *bulge out* as the belt bends. This out-bulge forces the sides of the belt to press *unevenly* against the V-pulley—as shown in figure 1-A (see accompanying diagrams).

Clearly, this *uneven pressure* against the V-pulley causes the belt to wear *unevenly*—with the wear concentrated where the bulge is greatest—and this concentrated wear at one point naturally shortens the life of a *straight-sided* V-belt.

Now, make this same test with the belt that is built with Concave Sides—the Gates Vulco Rope!

Whereas you felt an *out-bulge* when you bent a belt with straight sides, you find that the *Concave Sides* merely fill out and become *perfectly straight*. The sides therefore *press evenly* against the V-Pulley. This distributes the wear *uniformly* across the *full width* of the belt. Naturally, this means longer belt life and lower belt costs for you!

Only V-Belts made by Gates are built with concave sides.
Whenever you buy V-Belts, be sure that you get the V-Belt with the Concave Sides—The Gates Vulco Rope!

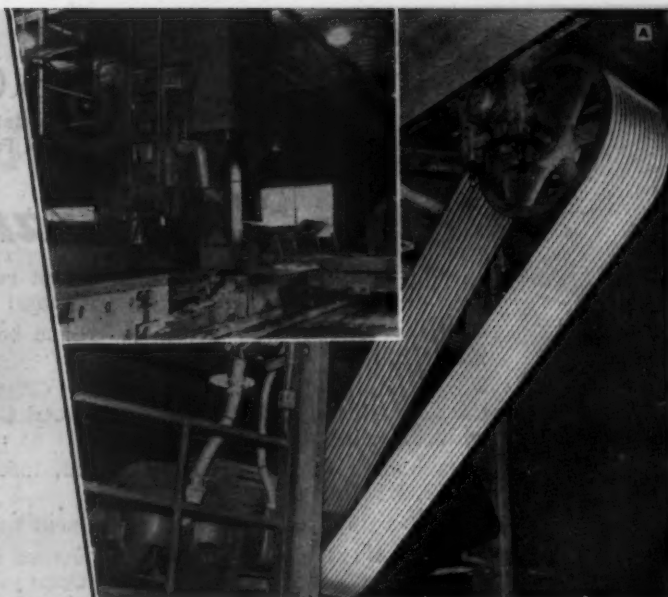


Hose V-Belts
Molded Rubber Goods
for Industry

VULCO ROPE DRIVES
ENGINEERING OFFICES AND JOBBER STOCKS
IN ALL INDUSTRIAL CENTERS

THE GATES RUBBER COMPANY • DENVER • U.S.A.

World's Largest Maker of V-Belts



This big bandmill, in the Masonite Corp. plant at Ukiah, Calif., is driven by Gates Vulco Ropes. The saw has a capacity of 200 thousand board feet of lumber in 8 hours.



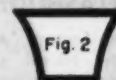
What Happens When a V-Belt Bends

**Straight-Sided
V-Belt**



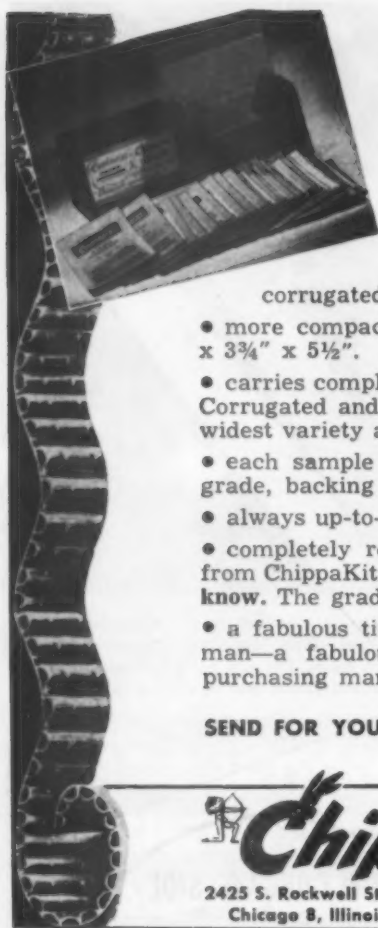
How Straight-Sided V-Belt Bulges in Sheave Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear At Point Shown by Arrows.

**Gates Vulco
Rope with
Concave Sides**



The Concave Sides Fill out to a Precise Fit in the Sheave Groove. No Side Bulge! Sides Press Evenly Against the V-Pulley—Uniform Wear—Longer Life!

CS-5110



Now! AT YOUR FINGERTIPS!

A Means Of Pre-determining
The Right Corrugated For Every Job

THE *ChippaKit*

• • • The handiest reference file of
corrugated materials you ever saw!

- more compact than many reference books—only 8½" x 3¾" x 5½".
- carries complete line of samples of Chippaflex Flexible Corrugated and Chippewa Single-Faced Corrugated—the widest variety available anywhere.
- each sample individually labelled, indicating weight, grade, backing sheet, flute, etc.
- always up-to-date—new samples sent as available.
- completely reliable—actual shipments do not deviate from ChippaKit sample standards. Once you specify—you know. The grade never changes.
- a fabulous time-saver in selection, for the packaging man—a fabulous time-saver in procurement, for the purchasing man.

SEND FOR YOUR *ChippaKit* TODAY!



2425 S. Rockwell Street
Chicago 8, Illinois

All Chippewa Products Are Distributed By
Selected And Accredited Paper Merchants

Chippewa....

PAPER PRODUCTS CO., INC.

WILL YOUR NAME BE REMEMBERED?

GITS Quality Plastic Products

Cement friendship and esteem—to bring a warm glow of remembrance! The cost is small... the value high!

GITS "Super Right Angle" Unbreakable Plastic FLASHLIGHT—

one of the famous "Mile of Light" Flashlights. Nickel plated brass, lacquered, perfect parabolic reflector gives a strong beam of pre-focused light. 3-way "ON-OFF" and signaling switch always works. Transparent or lustrous colored case.



GITS "ONE-HAND" KNIFE
Highest quality carbon steel blade, safelocks in 5 positions. Unbreakable plastic handles in six lustrous colors.

GITS RAZOR-NIFE AND KEY CHAIN
Razor blade with a safety handle. Refillable. Assorted lustrous colors.

GITS LETTER OPENER
Transparent, with off-set magnifying handle. Endurably sharp edges.

PAR-KIT No. 377
Ingenuous combination of wind shield ice scraper, key chain and coin holder. Holds 2 nickels and 2 pennies—always ready for parking meter.



ASK your specialty jobber to show you the complete line of Gits Quality Plastic Products, or write direct, using coupon below.

GITS MOLDING CORP.

4640 W. HURON STREET, CHICAGO 44, ILL.

Gentlemen:

☐ Please send me at once sample of the item I have checked below and prices in

quantity. ☐ With imprint

- ☐ Plain
- ☐ "Plastic Eye" Flashlight
- ☐ "Plastic Eye Jr." Flashlight
- ☐ "Super Right Angle" Flashlight
- ☐ "One-Hand" Knife
- ☐ Razor-Nife and Key Chain
- ☐ Letter Opener
- ☐ Nail File
- ☐ Thimble
- ☐ Stir Stix

- ☐ Bracelet Key Holder
- ☐ Shoe Horn
- ☐ Key Tag
- ☐ Match Pac
- ☐ Par-Kit

☐ The items you illustrate do not fully satisfy my needs, so please send me your complete catalog and full information. (PLEASE PRINT)

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

(Continued from page 284)

ches maximum gaging diameter; plain and thread ring gage blanks to 12.260 inches maximum gaging diameter; involute and serrated spline plug and ring gage blanks to 8.000 inches major diameter, and straight-sided spline plug and ring gage blanks to major diameters of 8.000 inches for plus and 6.000 inches for rings; machine taper plug and ring gage blanks to 5.000 inches gaging diameter; adjustable plug gages from 2.50 to 8.50 inches gaging diameters; adjustable snap gages to 12 inches; adjustable length gages to any desired length; dial indicators up to 3-¾ inches nominal bezel diameter; and master disks up to 8.010 inches in diameter. Recommended general designs covering taper plug and ring gages for special applications, flush-pin gages, and flat plug gages are also included.

Copies may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington 25 D. C. at 30¢ per copy. Manufacturers having government contracts may obtain copies through the contracting officer.

1 1 1

SILICONE-ORGANIC RESIN BLENDS IDEAL ELECTRICAL INSULATION

Improved silicone resins for electric insulation will bring about important changes in the renewal parts and service shop businesses of the electrical industry, it was forecast by H. F. Jones of General Electric's Chemical Department, speaking before the Renewal Parts Section of the National Electrical Manufacturers Association at Granville, Ohio. Silicone resins, with their exceptional heat resistance and electrical properties, come closer to being the ideal material for insulation on electrical equipment than any materials now in use, Mr. Jones stated.

Although early silicone resins lacked compatibility with organic resins, silicone resins have recently been developed with the ability to mix with and improve the properties of a wide variety of organic resins and compounds. These silicone blending resins, of which General Electric SR-82 is an example, have opened up a whole new field of investigation, Mr. Jones stated. Research indicates that alkyd and melamine resins modified with silicones have solvent and abrasion resistance approaching that of organic resins, and heat resistance superior to these straight organic resins. Such combinations also offer the possibility of producing heat-resistant resins at lower costs, Mr. Jones said.

With many applications in the electrical industry in need of insulation with higher heat resistance, the combination of silicone and organic resins can add a greater safety factor in motors, generators, and transformers at a minimum of cost. By the addition of varying amounts of silicone resins, it is conceivable that insulating resins tailored to specific temperature requirements will be produced, Mr. Jones said.

Weather Report

Continued cold with snow
flurries late tonight and
tomorrow

OUTSIDE: snow and colder



INSIDE: continued fair and warm

with **SPANG CW PIPE** **RADIANT HEATING INSTALLATIONS**



Spang CW Pipe is performance-proved for closed hot water heating systems. For over half a century, the ease of fabrication—welding, bending, cutting, threading—has made Spang CW Pipe a favorite.

Spang CW is not only easy to form, but it's strong, too. The coefficient of expansion of Spang pipe is practically the same as that of

concrete and plaster. Add the advantages of *low cost* and *long life*, and you'll see why Spang CW Pipe is in great demand.

Call on your friendly Spang CW Distributor the next time you need pipe, fittings, valves, fixtures and other piping materials. You can rely on him and the Spang CW Pipe he sells.

SPANG-CHALFANT

Division of The National Supply Company

GENERAL SALES OFFICES: Grant Bldg., Pittsburgh 30, Pa.

District Sales Offices: Atlanta, Boston, Detroit, Houston, Los Angeles,
New York, Philadelphia, Pittsburgh, St. Louis

Personalities



IN THE NEWS

Alfred E. Treen has been appointed Manager of Purchasing and Personnel at the Houston (Tex.) Works of A. O.



Alfred E. Treen

Smith Corp., succeeding F. B. Dunn, who has resigned from the company. Mr. Treen has been with the company's personnel administration staff since 1946. Previously he had been in personnel, safety and industrial relations work with the United States Steel Corporation.

S. W. Williams has been placed in charge of purchasing for The Moto-Truc Company, Cleveland, O., now engaged in a



S. W. Williams

large expansion program. Mr. Williams joined the company in 1945, after four years as an accountant with the Cleveland Ordnance District of the War Department. After several months as office manager and assistant purchasing agent, he was named Purchasing Agent.

Russell Wetherell, formerly Purchasing Agent for Sunde & d'Evers, Seattle, Wash., has been named Director of Purchasing for M and M Woodworking Company, Portland, Ore.

W. H. Franze has succeeded Neal Grosheider as Purchasing Agent for the Southern Pacific Railroad Company at El Paso, Tex. Mr. Grosheider has retired after 47 years' service.

Walter G. Davis has been appointed Purchasing Agent for the Bemeco, All-State, Kentucky-Virginia, Western Kentucky and Anthracite Divisions of National Mine Service Company. The announce-



Walter G. Davis

ment was made by R. D. Allison, General Purchasing Agent. Mr. Davis' headquarters will be in Beckley, W. Va.

Mr. Davis joins National Mine after several years' experience as supervisor of the purchasing departments of Gay Coal & Coke Company and Gay Mine Company, Mount Gay, W. Va. For ten years prior to that he was associated with the Carbon Fuel Company, Carbon, W. Va. During World War II he served in the supply and personnel departments of the Naval Air Transport Service.

Felix H. Haas has been named Purchasing Agent for the Northwest district for Union Pacific Railroad, at Portland, Ore. He succeeds L. V. Guild, retired.

Norman C. Stiles has been appointed Purchasing Agent of Chemstrand Corp., Decatur, Ala. Chemstrand is jointly



Norman C. Stiles

owned by Monsanto Chemical Company and American Viscose Corporation. Chemstrand is currently building a plant at Decatur to produce 30,000,000 pounds of the new acrylic synthetic fiber, Acrilan, annually. Mr. Stiles, a graduate of Kansas State College was formerly a buyer for American Viscose.

George C. Mercer, Purchasing Agent for P. R. Mallory & Company, Inc., Indianapolis, Ind., has been appointed



George C. Mercer

Director of Purchasing. Mr. Mercer is a past Vice President of the National Association of Purchasing Agents for District 4.

W. J. Topmiller, Jr., former Assistant Purchasing Agent, moves up to succeed (Please turn to page 290)

EVEN OUR COMPETITORS' BEST CUSTOMERS INSIST ON SUNOCO WAY LUBRICANT

In the competition for industry's lubrication business, all refiners are constantly improving their products. Every so often, one company or another finds a way to make a petroleum product that, for a particular use, licks to a standstill anything its competitors can offer. Immediately the others dig in and try to find the secret. Until they succeed, the originator's ingenuity pays off in a rising flood of sales.

That is the happy position in which Sun Oil Company finds itself with its Sunoco Way Lubricant. Since its introduction eight years ago, no other refiner has been able to match this tableway lubricant. Here is proof any man in metalworking can appreciate:

Sunoco Way Lubricant is insisted upon by 188 metalworking concerns which buy all their other lubricants from our competitors.

In other words, our competitors have loyal 100% customers, just as we have; but when it comes to tableway lubrication, loyalty goes out the window and Sunoco Way Lubricant is specified.

The reason for the success of Sunoco Way Lubricant is that no one has been able to equal it for *protection of tableways . . . ability to prevent "stick-slip" . . . prevention of table flotation . . . resistance to wiping off or squeezing out under heavy loads*. These benefits add up to higher production, better finishes, lower maintenance costs, longer tool and machine life. That is why Sunoco Way Lubricant is approved or definitely recommended by 38 of America's leading machine tool builders.

Want to see factual case histories and learn more about this product? Send for illustrated booklet, "Sunoco Way Lubricant." Samples are available, too, to companies in the metalworking industry. Write Dept. PU-10.

SUN INDUSTRIAL PRODUCTS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL



(Continued from page 288)

Mr. Mercer as Purchasing Agent. Mr. Topmiller is president of the Purchasing Agents Association of Indianapolis.

S. L. Nicholson, Purchasing Agent for Servel, Inc., Evansville, Ind., has been



S. L. Nicholson

named Vice President in Charge of Purchasing.

C. W. Bryant has been appointed manager of the purchasing section of the General Electric Materials and Purchasing Department at Schenectady, N. Y. William A. Sredenschek is manager of the department.

Mr. Bryant, a graduate of Carnegie Institute of Technology, was formerly purchasing agent of ferrous products.

Maurice D. Low has been promoted to the new post of Director of Purchasing for Crouse-Hinds Company, Syracuse, N. Y. He joined the company 32 years ago and has been in charge of purchasing for the past 25 years. Mr. Low is a past president of the Purchasing Agents Association of Syracuse and Central New York.

Dean E. Hethington succeeds Mr. Low as Purchasing Agent. He joined the company 19 years ago, and has been Assistant to the Purchasing Agent since 1935. He is president of the Purchasing Agents Association of Syracuse and Central New York.

John B. Link and Paul B. Billy have been named Purchasing Agents for Crouse-Hinds.

Robert Harvey has been appointed City Purchasing Agent of Paris, Tex.

George M. Baumann has been appointed Assistant General Manager and Purchasing Agent of the newly created mid-western department of Federated Metals Division, American Smelting and Refining Company. The new department takes in plants at both Whiting, Ind. and Detroit, Mich. Mr. Baumann formerly functioned in the same capacity for the Whiting plant only.

Vincent P. Gregg has been appointed Manager of Purchasing of Non-Ferrous Materials in the General Electric Materials and Purchasing Department, Schenectady, N. Y. Bruce H. Bradbeer has been named Manager of Purchasing of Ferrous Materials. Herbert L. Schnell has been appointed Manager of Purchasing of Factory Equipment and Subcontracting.

Branford P. Hoffman, a member of the purchasing department of Hercules Powder Company, Wilmington, Del., will fill the newly-created position of Purchasing Supervisor of the Hercules Experiment Station, the company's central research laboratories near Wilmington.

Mr. Hoffman joined Hercules in 1942 as assistant buyer of ordnance supplies. He transferred to the Sunflower ordnance works, Lawrence, Kan., as a buyer in 1943 and two years later was named Assistant Purchasing Superintendent there. He returned to the company's purchasing department in 1945 as a buyer. He left the company that year, but resumed the buyer's position in 1950.

Joseph G. Smith has been appointed Director of Purchases of Pittsburgh Steel Company, Pittsburgh, Pa. He succeeds J. H. Phillips, retiring General Purchasing Agent.



Joseph G. Smith



J. H. Phillips

Mr. Phillips who came to Pittsburgh Steel 34 years ago as a buyer is a former president of the Purchasing Agents Association of Pittsburgh.

Mr. Smith joined the company in 1937 and since has served in various capacities in both the sales and purchasing departments. He was district sales manager in Pittsburgh and New York and for the past two and a half years has been Purchasing Agent for the company.

H. W. Berg has been promoted to fuel agent of the Rock Island Lines, Chicago, Ill., in charge of all fuel purchases. He was formerly chief clerk in the purchasing department.

Leon R. Steffen has been appointed Director of Purchases for A-C Spark Plug Division, General Motors Corporation, Flint, Mich. He succeeds Herbert R. Wells, who has retired after 40 years, with A-C.

Max W. Burrell has been appointed Director of Procurement for Collins Radio Company, Cedar Rapids, Iowa, to head the newly established procurement division. Mr. Burrell, who joined Collins in 1944, has been General Sales Manager since the end of World War II.



Max W. Burrell

The new division will consolidate all the activities previously conducted under the purchasing department of the manufacturing division. It will also be extended to include certain other work which has previously been conducted in various other divisions, such as the acquisition and property management of owned and leased facilities, administration of major subcontracts, and the procurement of materials, supplies and services in addition to those incorporated in the company's products.

Ira J. Purdy has been named Purchasing Agent for consumer products and Herman A. MacDougall for defense products at Westinghouse Electric Corporation's East Springfield (Mass.) Works. The appointments were announced by Bruce D. Henderson, General Purchasing Agent for Westinghouse.

Theodore C. Beug has been moved to the newly-created position in Charge of Purchases and Planning, Cory Defense Contract Division, Cory Corporation, Chicago, Ill. His previous experience with the company includes service in production control and in the development of new products. Prior to that he was in production process planning of Boeing Airplane Company, Wichita, Kan.

H. F. Roberts has been appointed Purchasing Agent of the electrical, chassis, trim and paint department of the Lincoln-Mercury Division, Ford Motor Company, Detroit, Mich. In this capacity Mr. Roberts returns to the division organization from its gas turbine plant, where he had been Purchasing Agent. He fills the vacancy created by Charles S. Brown's elevation to General Purchasing Agent. E. P. Byington has been appointed Purchasing Agent of the Lincoln-Mercury Division's gas turbine plant, replacing Mr. Roberts.

Mr. Roberts, a Ford veteran of 32 years' service, has been a senior buyer for Lincoln-Mercury since 1947. Mr. Byington, with Ford since 1925, has been a senior buyer in the Ford Division since May, 1950.

(Please turn to page 292)



BIG REASONS

Why LYON Can Handle Your Sheet-Metal Subcontracts **BETTER!**



MAIL
COUPON FOR
THIS BROCHURE
•
IT TELLS ALL

LYON METAL PRODUCTS, INCORPORATED
1033 Monroe Avenue, Aurora, Illinois

Please send me a copy of LYON'S DEFENSE PRODUCTION BROCHURE which explains the 4 big reasons why Lyon can handle sheet metal subcontracts better.

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COMPANY _____
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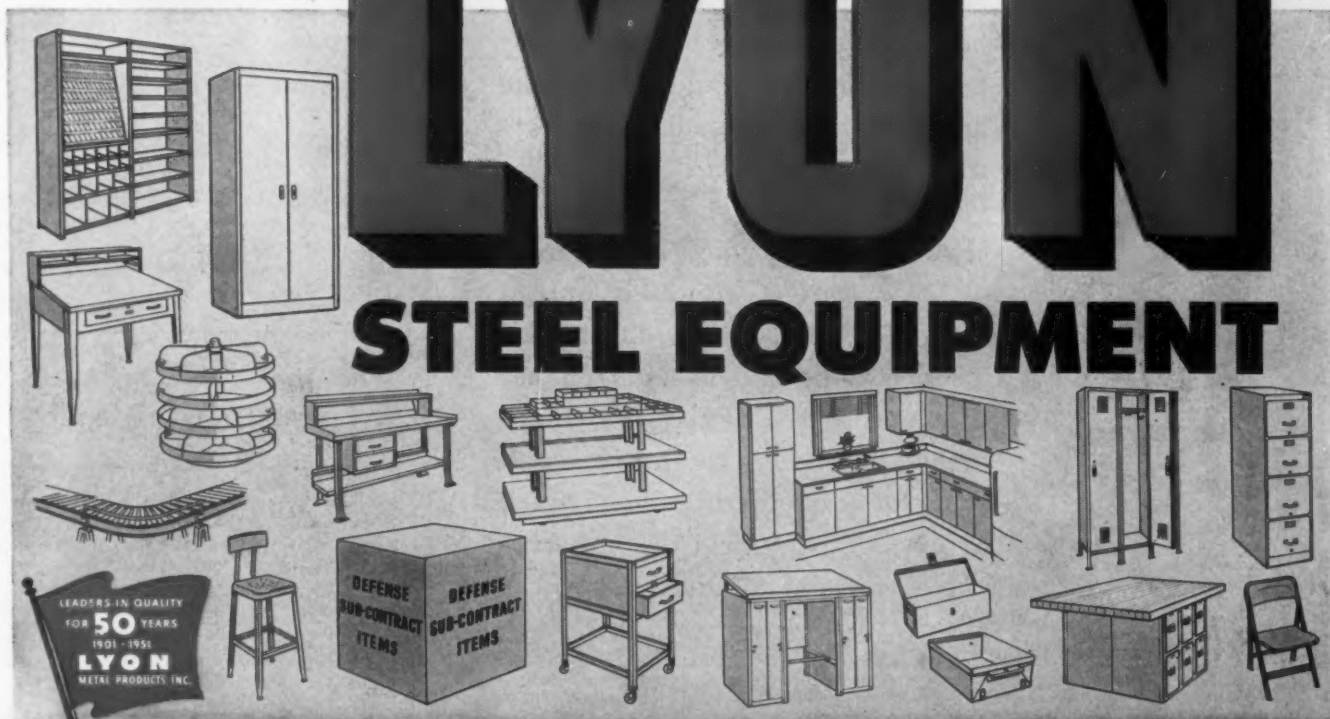
2 STRATEGIC PLANTS . . . AURORA, ILL., AND YORK, PA.

LYON METAL PRODUCTS, INCORPORATED

General Offices: 1033 Monroe Avenue, Aurora, Illinois

LYON

STEEL EQUIPMENT

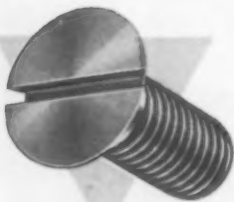
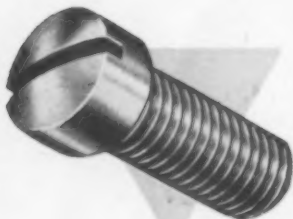
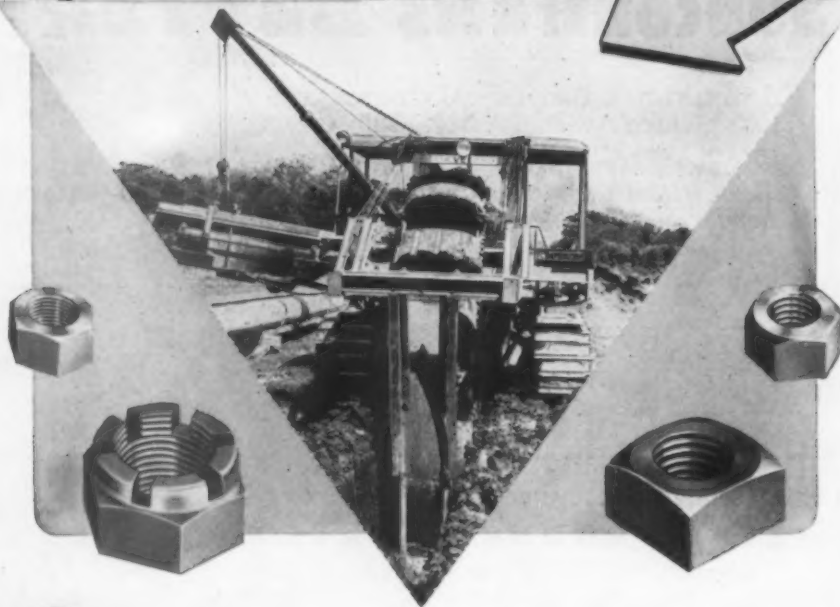


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1901-1951
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|-------------|--------------------|---------------|------------------------|---------------------|-------------------|-----------------|---------------|
| • Shelving | • Kitchen Cabinets | • Conveyors | • Economy Locker Racks | • Display Equipment | • Filing Cabinets | • Service Carts | • Tool Stands |
| • Lockers | • Cabinet Benches | • Bar Racks | • Flat Drawer Files | • Drawing Tables | • Folding Chairs | • Sorting Files | • Shop Boxes |
| • Stools | • Storage Cabinets | • Tool Boxes | • Tool Room Equipment | • Revolving Bins | • Work Benches | • Drawer Units | • Tool Trays |
| • Bin Units | • Welding Benches | • Parts Cases | • Wood Working Benches | • Hanging Cabinets | • Bench Drawers | • Hopper Bins | • Shop Desks |

**THE TOUGHER THE FASTENER
THE BETTER YOUR EQUIPMENT**



Good machinery requires good threaded fasteners. For no matter how good the component parts, the best equipment would soon shake apart without threaded fasteners that really hold firm.

The Cleveland Trencher unit shown above is typical of hundreds of heavy-duty machines assembled with TRIPLEX threaded fasteners. There is ample reason—the tougher the fastener, the better your equipment. Write for catalog or wall chart for easy ordering. The Triplex Screw Company, 5317 Grant Avenue, Cleveland 5, Ohio.

TRIPLEX *for TOUGHNESS*
CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

Stephen J. Geoghegan has been appointed Vice President in Charge of Materials Control of the Industrial Tape Corporation, a subsidiary of Johnson & Johnson, New Brunswick, N. J.

Mr. Geoghegan, who has been with the company since 1943, was Director of the Materials Control Division prior to his appointment as Vice President. He has been a director of the company since 1947, and was formerly associated with Johnson & Johnson in Bloomfield, N. J., and Federal Shipbuilding, Kearny, N. J.

George W. Schroeder has been appointed Purchasing Agent for Vapor Heating Corporation and Roth Manufacturing



George W. Schroeder

Company (a Vapor subsidiary), Chicago, Ill. Mr. Schroeder has been with Vapor and Roth for 16 years, and has been Assistant Purchasing Agent for several years. Prior to that he worked in the production, testing and planning departments.

V. E. McCoy has been appointed Chief Purchasing Officer for the Milwaukee Road, Chicago, Ill. He succeeds G. H. Walder, who has retired after 39 years' service.

Herbert C. Grau has been appointed Director of Purchases for the Whirlpool Corporation, St. Joseph, Mich. Leonard Cooper, Vice President in Charge of Procurement for the company, has been appointed general manager of the La-Porte Aircraft Division.

AMONG THE COMPANIES YOU BUY FROM

Fort Wayne, Ind.—General Electric Company. Edmund C. Schorr has been appointed manager of sales of the specialty transformer and ballast department.

Bloomfield, N. J.—Westinghouse Electric Corporation. Harold G. Cheney has been appointed sales manager for the company's electronic tube division.

Chicago Ill. — The Electric Products Company. A separate office has been established here, devoted to the sale and servicing of battery charging equipment and traction motors for industrial trucks. Al O. Seehafer is in charge.

(Please turn to page 294)

Here's a timesaver you'll find invaluable . . .

Containing much salient data on "specs," this new Frasse chart will prove a boon when you're working with stainless steels. With it a specified steel can easily be identified in less than 30 seconds—saving valuable time normally spent thumbing through individual specifications.

Compiled by Frasse Technical Service, the chart shows chemical analysis requirements for each of 37 Military, Army, Navy, Aeronautical, and Federal specifications. Also lists specified forms (bars, wire, etc.) and nearest corresponding SAE, AISI and AMS type numbers.

Printed on durable cardboard stock, the chart is regular file card size—can be tacked on wall, filed in desk drawer, or slipped under glass for ready reference.

It's furnished without charge, of course—so make your job an easier one! Send the coupon below for this helpful chart today—and remember that Frasse Technical Field Service is always available to assist you in applications involving stainless steels. **Peter A. FRASSE and Co., Inc.**, 17 Grand St., New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Ave., Philadelphia 29, Pa. (Baldwin 9-9900) • 50 Exchange St., Buffalo 3, N. Y. (Washington 2000) • 157 Richmond Ave., Syracuse 4, N. Y. (Syracuse 3-4123) • Lyndhurst • Hartford • Rochester • Baltimore.



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Bars • Sheets • Strip • Plates • Angles
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38AA

Gentlemen: Please send me, without obligation, a copy of your new data chart, Sec. A No. 2, showing Government "specs" for stainless steels.

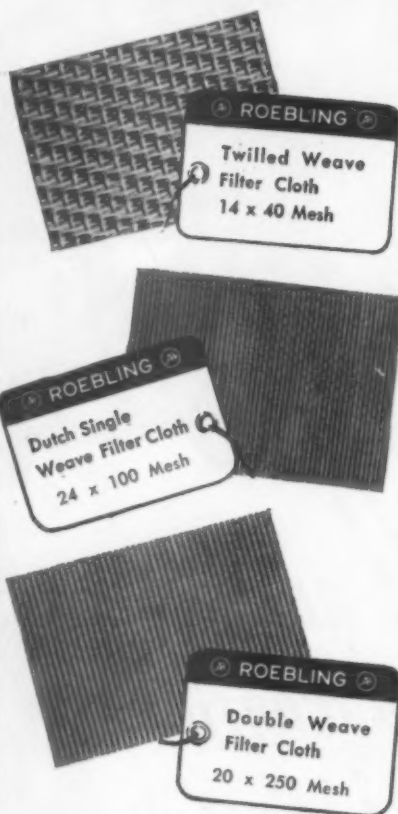
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FILTER CLOTH

**Superior service
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THERE'S A ROEBLING METALLIC Filter Cloth woven of the particular metal or alloy, and in just the weave and mesh, that will bring maximum efficiency and economy to your filtering operations. The three weaves shown above have the extra strength required for higher pressures or vacuum. Adaptable for nearly any type of filter, they are smooth-woven and easy to clean...assure free discharge of filtrate, and retain even the finest solids.

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John A. Roebling's Sons Company
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Woven Wire Fabrics Division
John A. Roebling's Sons Co., Roebling, N. J.
Gentlemen: Please send me full information
about Roebling Metallic Filter Cloth.

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Company.....
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ROEBLING

New York, N. Y.—Robert Gair Company, Inc. Beaven W. Mills has been appointed sales manager for Gairvure cartons. Gair has brought its equipment for producing gravure printed cartons up to triple the original capacity. Mr. Mills will be responsible for the promotion, development and sale of sheet-fed gravure cartons.

Boston, Mass.—F. J. Stokes Machine Company. Harry R. La Towsky, Jr., has been added to the New England staff, and will work under the direction of Harold G. Roman, district manager.

Buffalo, N. Y.—Joseph T. Ryerson & Son, Inc. Paul L. Wright has been appointed sales manager of Ryerson's plant



Paul L. Wright

here. He was formerly office manager, in which capacity he also served as supervisor of the company's inside sales department.

Pittsburgh Pa.—Pittsburgh Rolls Division, Blaw-Knox Company. F. H. Frey has been promoted to manager of roll sales.

Harrisburg, Pa.—Worthington Pump and Machinery Corporation. A branch office has been opened here at 2nd and Locust Streets, in charge of A. L. Mays.

Cleveland, O.—Ohio Hoist & Mfg. Company. William A. Spence has been appointed general manager of the company, one of the Round Associate Chain Companies, and will supervise the manufacture and sales distribution of hoists and other materials handling equipment.

New York, N. Y.—Kaylo Division, Owens-Illinois Glass Company. J. A. Corcoran has been assigned to the branch office here.

San Francisco, Calif.—De Laval Steam Turbine Company. A new building has been completed here at 160 Folsom Street to serve as headquarters for sales and service activities. The new operation will be under the direction of C. F. Reeves, who has long been in charge of De Laval's West Coast sales.

Washington, D. C.—B. F. Goodrich Co. Harold Williams has been named special representative for the industrial and general products sales department.

Chicago, Ill.—American Steel & Wire Company. Thurman Haskell has been assigned to special duties on the staff

of the area manager of sales, Western district, with headquarters here. H. C. Hoy has been named manager of sales, Denver, Colo., to succeed Mr. Haskell.

Neenah, Wis.—Kimberly-Clark Corporation. The following appointments of sales representatives have been announced: Raymond J. Miller, formerly of the market research division, has been assigned to territory 2, district II, comprising most of Ohio and parts of Pennsylvania and West Virginia. He will make his headquarters in Cleveland. William E. Cozens has been assigned to New York City, and Richard S. Pauli to Boston.

Cleveland, O.—The American Box Company. A. R. Caputo has been named to head the company's expanded sales department.

Chicago, Ill.—A. O. Smith Corp. John B. Madden has been appointed hydraulic sales manager for the North Central district, with offices at 310 S. Michigan Avenue.

Detroit, Mich.—Pratt & Whitney. The company's office here has been relocated in a new, modern building at 8626 McNichols Road. Samuel J. Matchett is district manager.

San Francisco, Calif.—The Whitney Chain Company. District sales offices here have been moved to new and larger quarters at 70 Dorman Avenue. The office is under the direction of George F. Haag, district manager.

Louisville, Ky.—Reynolds Metals Company. W. S. Acuff, Jr., has been named industrial products sales manager of the company's building products division.

New York, N. Y.—Sylvania Electric Products, Inc. Barton K. Wickstrum has been elected vice-president and director of sales. General sales manager of Sylvania's lighting division since 1946, he succeeds Robert H. Bishop, resigned. Charles A. Burton will succeed Mr. Wickstrum as general sales manager of the lighting division.

Chicago, Ill.—International Minerals & Chemicals Corporation. S. T. Keel has been appointed domestic sales manager of the phosphate division.

Long Branch, N. J.—Martin Rubber Company, Inc. Joseph G. Seck has been appointed vice-president in charge of sales.

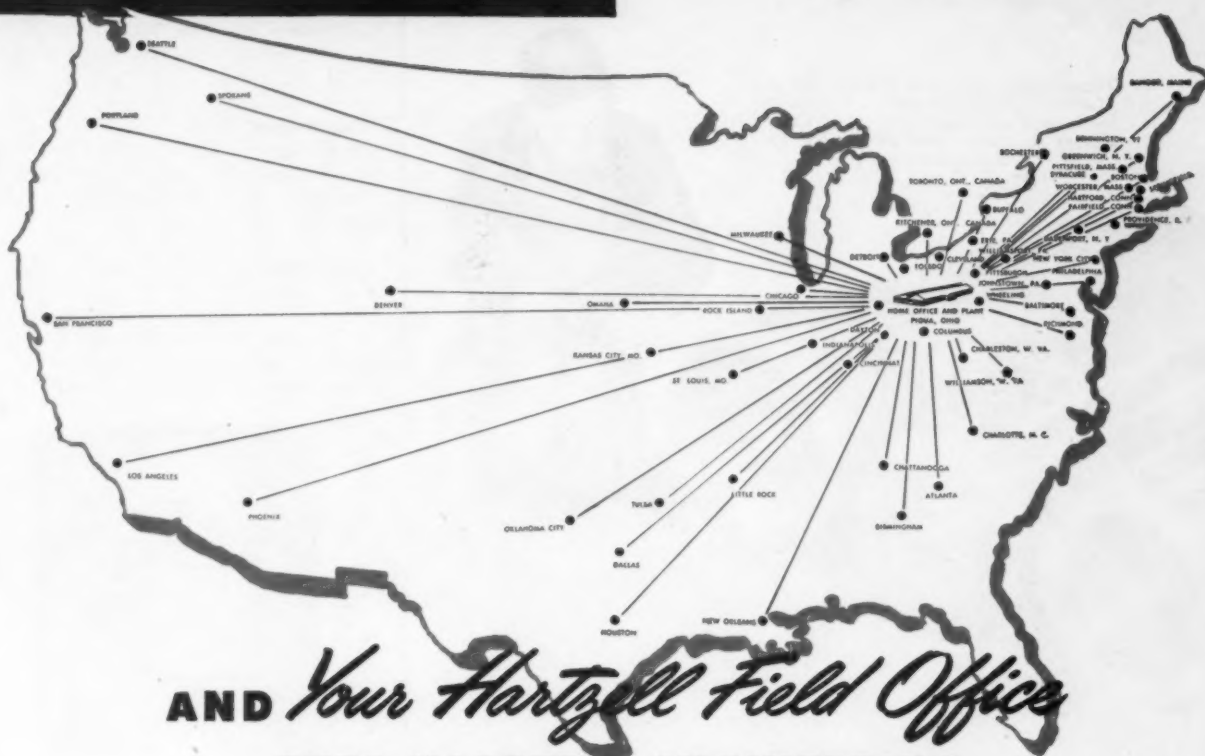
Houston, Tex.—Air Reduction Magnolia Company, Division of Air Reduction Company, Inc. G. F. Vietor, Jr. has been named manager of the Houston district, with headquarters here and branch offices at San Antonio, Beaumont and Corpus Christi, Tex.

Los Angeles, Calif.—The Babcock & Wilcox Tube Company. The company's Pacific Coast office has been moved to larger quarters in the Lawson-Chipman building, 1111 Wilshire Boulevard.

(Please turn to page 296)

POWERFUL

Fans and Blowers...



**AND Your Hartzell Field Office
PUTS HARTZELL ENGINEERING
RIGHT IN YOUR BACK YARD!**



If you've got an "incurable" air-moving problem, dump it in our lap. It's for just such service that we have built our engineering-distribution system. Each of our field offices—and there's one

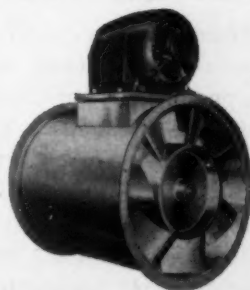
near you—is there to help you get results, not merely to calculate the dollars and cents of a sale.

No red tape, no waiting for home-office authority. Here's how: If you don't know your Hartzell office, drop us a line. A fully experienced direct factory representative will call on you promptly. He'll have full authority to work with you, make recommendations and quote costs. He can check with our home-office engineering laboratory if he needs to.

You can bank on what he tells you. That's why he's with Hartzell. And that's why Hartzell customers move air effectively at minimum cost.

If you foresee an air-moving problem for the future, we urge you to call your Hartzell man in now. Give us all the time you can. Within the past few months we have practically doubled plant capacity, and each month we are setting new production records, but we still haven't caught up with the demand for Hartzell products.

Why the demand? It's simple. Hartzell fans and blowers move air efficiently.



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SHENANGO Centrifugal
CASTINGS

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These ram pistons, centrifugally cast of Meehanite Metal for 300-ton hydraulic press, must withstand 4,000 p.s.i. Completely machined and assembled by Shenango.



Teamed up for longer life under pressure

SHENANGO CENTRIFUGAL CASTINGS OF MEEHANITE METAL

FOR pressure service . . . for almost any severe service . . . it's hard to match Shenango centrifugally cast Meehanite Metal.

First, Shenango's centrifugal process means a uniform, high-strength, pressure-dense casting, free from sand inclusions, blow holes and other defects. Next, in Meehanite Metal you have finer graphite flakes, always more evenly dispersed, thus avoiding stress concentrations and permitting a finer finish.

So here's a combination you just can't beat for wear-life . . . for resistance to abrasion, pressure or shock . . . for long-range economy!

If your plans call for essentially symmetrical parts, large or small, rough, semi- or finish-machined, check with Shenango. Get *all* the facts! Informative bulletins are yours for the asking.

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ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE METAL

Pittsburgh, Pa.—Mosebach Electric & Supply Company. Ray L. Hampton has been named vice-president in charge of sales. He was formerly sales manager.

Cincinnati, O.—Independent Pneumatic Tool Company. Branch offices here have been moved to a new building at 3726-28 Floral Avenue. The branch is managed by H. C. Brown.

Los Angeles, Calif.—National Cylinder Gas Company (Pacific Coast) has moved into a new dry ice and carbonic gas warehouse at 4560 Pacific Blvd., Vernon, 58.

New York, N. Y.—The Solvay Sales Division, Allied Chemical & Dye Corporation. The following executive appointments have been announced: Lester B. Gordon has been appointed vice-president; Denman Peniston, director of sales;



Denman Peniston

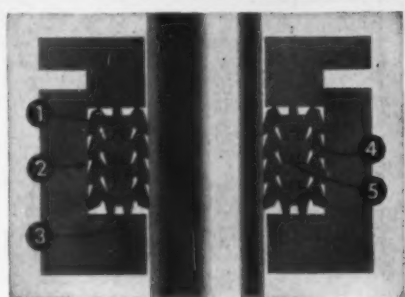
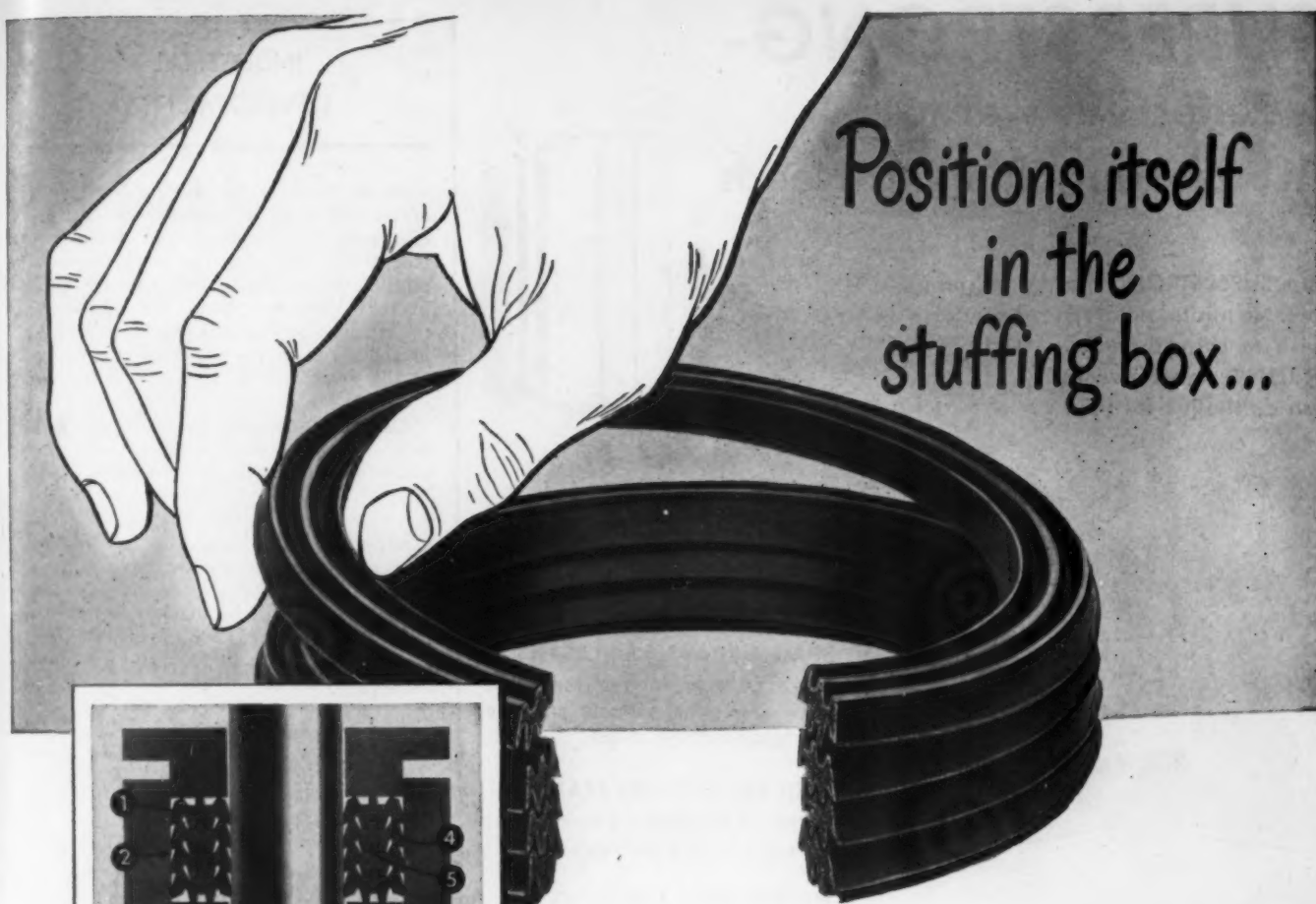
and John H. Elleman, assistant director of sales. Mr. Gordon has had 36 years of continuous service with The Solvay Sales Division and its predecessor companies, and for the past four years was director of sales. Mr. Peniston began work as an office-boy in the predecessor of the present Solvay Sales Division 41 years ago. For the past four years he has been assistant director of sales.

Chicago, Ill.—Manhattan Rubber Division, Raybestos-Manhattan, Inc. Austin L. Hawk has been named assistant manager of the Western sales district.

Whiting, Ind.—Federated Metals Division, American Smelting and Refining Company. A midwestern department has been established, comprising North and South Dakota, Minnesota, Michigan, Wisconsin, Indiana, and parts of Illinois, Ohio, Iowa, and Kentucky. Carl J. Gross is general manager. John W. Kelin has been appointed midwestern sales manager, and will direct the activities of the entire midwestern sales organization, with headquarters at Whiting.

Marietta, O.—The B. F. Goodrich Company. Robert Price has been appointed sales manager of the plastic products division.

Milwaukee, Wis.—Crucible Steel Company of America. H. C. Ende, Jr., has been appointed branch manager here.



HERE'S HOW UNEEPAC WORKS

1. Lips are positioned diametrically and vertically by center section of sealing ring.
2. Spaces between lips and heels allow fluid pressure to act upon each lip.
3. Lips are protected by the projecting portion of center section against damage by excessive gland pressure.
4. Lips are supported to prevent collapse or distortion by excessive fluid pressure.
5. Each ring correctly centers itself on the preceding ring so that they align vertically and nest perfectly.

Uneepac

... the new Johns-Manville
automatic ring packing

YOU CAN SAVE ASSEMBLY TIME by using Uneepac because its unique design practically eliminates packing installation troubles.

Each Uneepac ring is made so that it automatically centers itself on the preceding ring when inserted in the stuffing box. Thus, the entire packing set is aligned vertically and nested perfectly.

Uneepac rings nest so that each lip is always exposed to fluid pressure and responds instantly to its changes. As a result, the assembled Uneepac set seals tightly with minimum friction, reducing wear on both rod and packing.

Because each Uneepac ring is a complete self-protected packing unit, no header or follower rings are generally required—often an additional saving in installation time.

Uneepac is used on hydraulic presses, pump rods and plungers, compressors and similar equipment. This automatic ring packing is available for shaft diameters from $\frac{5}{8}$ " up.

For more complete information, ask for Brochure PK-58A. Address Johns-Manville, Box 290, New York 16, N. Y. In Canada, write 199 Bay Street, Toronto, Ontario.

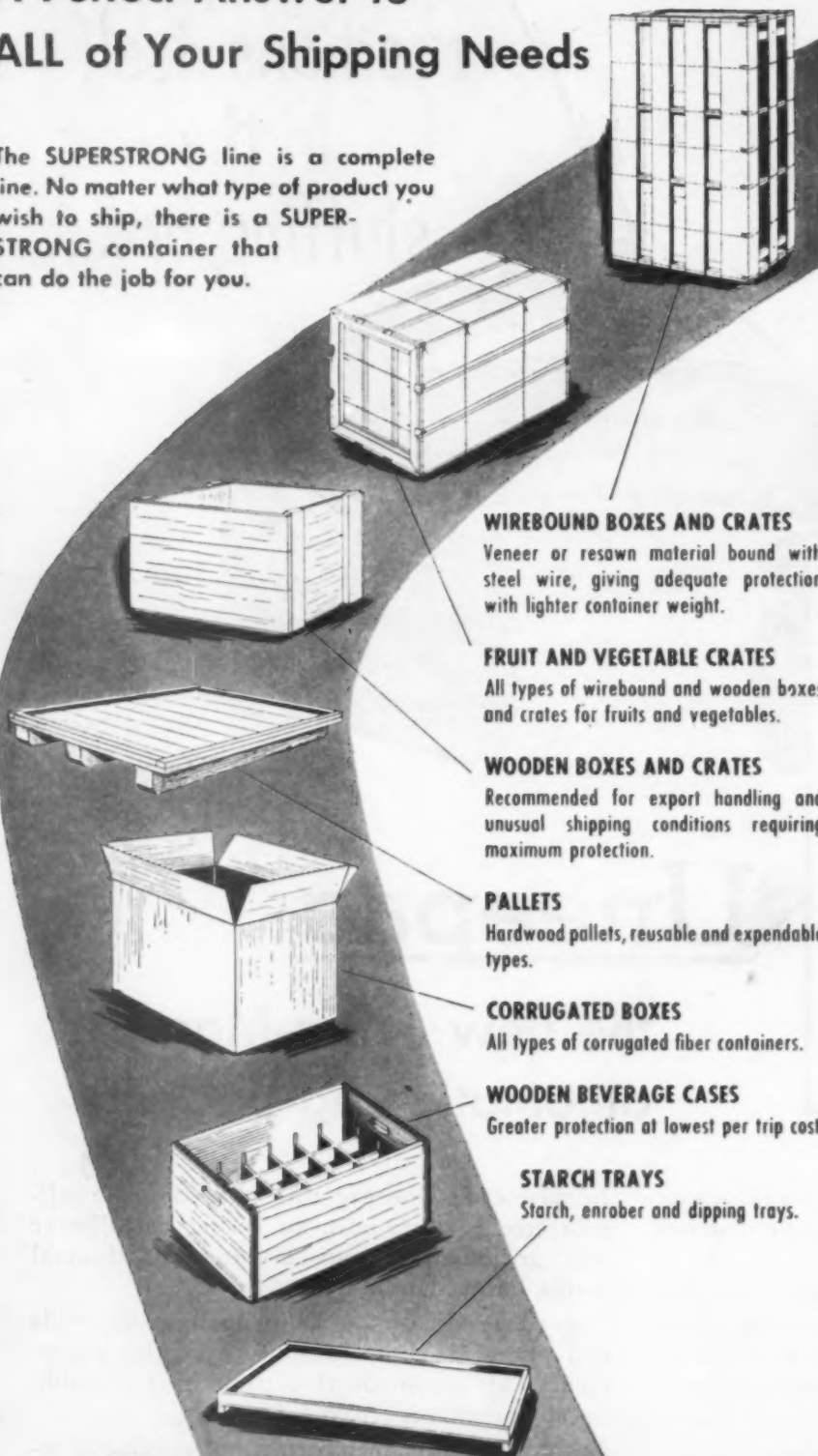


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SUPERSTRONG-

A Perfect Answer to ALL of Your Shipping Needs

The SUPERSTRONG line is a complete line. No matter what type of product you wish to ship, there is a SUPERSTRONG container that can do the job for you.



WIREBOUND BOXES AND CRATES

Veneer or resawn material bound with steel wire, giving adequate protection with lighter container weight.

FRUIT AND VEGETABLE CRATES

All types of wirebound and wooden boxes and crates for fruits and vegetables.

WOODEN BOXES AND CRATES

Recommended for export handling and unusual shipping conditions requiring maximum protection.

PALLETS

Hardwood pallets, reusable and expendable types.

CORRUGATED BOXES

All types of corrugated fiber containers.

WOODEN BEVERAGE CASES

Greater protection at lowest per trip cost.

STARCH TRAYS

Starch, enrober and dipping trays.



RATHBORNE, HAIR and RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

INDUSTRIAL DEVELOPMENTS

Norton Company, Worcester, Mass., has announced plans to provide increased facilities for the manufacture of silicon carbide grain. The plans call for a re-equipping of two of the present abrasive mills in the Worcester plant. By combining the crushing and milling units now housed in these two mills, Norton's processing of the grain will be increased 30%.

Chain Belt Company is constructing a new warehouse providing expanded facilities for the Pacific Northwest in Portland, Ore.

Atlantic Steel Company, Atlanta, Ga., has broken ground for the first phase of a multi-million dollar expansion program. The first unit will be an electric furnace with an annual capacity of 100,000 tons of steel, increasing the company's annual capacity by 50%.

Stanart Printed Specialty Co., 100 E. 144th St., New York, N. Y., is a new firm specializing in the production of printed and die-cut pressure-sensitive labels in continuous rolls.

Diamond Alkali Company has announced a two-year, multi-million dollar program of plant expansion at the Painesville (Ohio) plant. The project embraces extensive enlargement and modernization of present facilities which will enable the company to step up output of caustic soda and chlorine substantially by the electrolytic method. It also includes construction of a new plant for producing perchlorethylene, a chlorinated hydrocarbon solvent whose industrial applications have increased rapidly in recent years.

Chicago Metal Hose Corporation, Maywood, Ill., will occupy a new plant in Memphis, Tenn., designed for the fabrication of aircraft assemblies and components. The plant will total 120,000 square feet.

The Babcock & Wilcox Company, New York, N. Y., has made plans for a new plant, and for expanded use of subcontracted facilities. The facilities to be used on a subcontracting, or lease basis, are at Wilmington, Del., Wilmington, N. C., and Dallas, Tex. The new plant will be located at West Point, Miss.

Southern Alkali Corporation, a wholly-owned subsidiary of Pittsburgh Plate Glass Company, has changed its corporate name to Columbia-Southern Chemical Corporation.

Webb Wire Works, New Brunswick, N. J., has been purchased by The Carpenter Steel Company, Reading, Pa. Webb manufactures needle wire, stainless steel spring wire, and other specialties in small diameters down to .0025".

(Please turn to page 300)



*Take a bite out of
high power costs!*

Bring them down with these DAYTON Cog-Belt* "teeth"

Switch to premium Dayton Cog-Belts and watch the cost of power transmission come tumbling down. Original cost is less. 5 Dayton Cog-Belts do the work of 7 ordinary V-Belts.

You save drive space. Cog-Belts let you use up to 25% shorter center-to-center pulley distances.

Cogs are the *only* V-Belts scientifically built to bend, like your finger. They withstand flexing and compression strains better, run cooler, last longer.

To get shut of V-Belt troubles for the duration, to save money and drive

space, give your Dayton Distributor the "high-sign" of better V-Belt power transmission: the arched finger that means Dayton Cog-Belts and important savings!

COGS FIX FLATS!

Dayton Cog-Belts converted a compressor drive in a railroad shop, from a flat drive that averaged 6 breakdowns a year, to a trouble-free V-flat drive now going into its tenth year of service. Cogs need no special pulleys, grip so well they convert flat to V-flat with only one pulley change!

- ✓ 40% more h.p. per belt
- ✓ fewer belts
- ✓ fewer pulley grooves
- ✓ longer belt life



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WORLD'S LARGEST MANUFACTURER OF V-BELTS

OCTOBER, 1951

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Need a new supplier? Do names, addresses or telephone numbers of regular suppliers sometimes escape you? Reach for the 'yellow pages' of the telephone directory to get the 'where to buy it' information you want.

You'll find a heading in the 'yellow pages' for practically every kind of industrial equipment. And under each heading you'll find buying information about manufacturers and their products, *who* their local distributors and agents are, and *where* they're located.



Purchasing agents all over the country find the 'yellow pages' a mighty handy guide for reaching sources of supply quickly. Next time you need a supplier in a hurry, turn to the 'yellow pages'! They'll save time.

America's Buying Guide for More Than 60 Years



Stronghold Pacific Corporation, western affiliate of Stronghold Screw Products, Inc., Chicago, Ill., has acquired the stock ownership of Rivco, Inc., Downey, Calif., manufacturer of commercial, aircraft and automotive fasteners.

Thermoid Company's wholly-owned Canadian subsidiary, Joseph Stokes Rubber Co., Ltd., Welland, Ont., has concluded arrangements for the sale of substantially all of its assets to the General Tire and Rubber Co., Ltd., of Canada.

Republic Rubber Division, Lee Rubber & Tire Corporation, has begun construction on a \$2,000,000 plant addition at Youngstown, O. The new facilities will produce wire and textile braided lead press hose for defense needs. Completion is expected in about 10 months.

Northrop Aircraft, Inc., parent company of the Dy-Chek Company, producer of materials for Dy-Chek, the dye penetrant method of inspection, has made a licensing agreement with Turco Products, Inc., Los Angeles, Calif. Turco's Dy-Chek Division will assume both manufacturing and distribution functions for the materials. Nationwide field service and overnight delivery will be available in the near future, according to the announcement.

Shell Chemical Corporation will add a new synthetic ammonia plant to its other petrochemical manufacturing units at Dominguez, Calif. Construction of the multi-million dollar plant will begin this year, with completion scheduled for late in 1952.

The E. A. Stevens Level Co., Newton Falls, O., has been purchased by The Columbian Vise & Mfg. Co., Cleveland, O.

Dunn Steel Products Company, Plymouth Mich., has been merged with the Townsend Company of New Brighton, Pa. Townsend will operate Dunn Steel as a separate division continuing the manufacture of its special line of cold headed parts primarily for the automotive industry.

The North American Philips Company, Inc. has purchased the capital stock of The A. W. Haydon Company, Waterbury, Conn.

Bird & Son, Inc., East Walpole, Mass., is spending approximately \$750,000 to double the capacity of its felt mill at Shreveport, La.

Modern Corporation, Oak Park, Mich., manufacturer of special cutting tools, has completed a plant expansion program, doubling the amount of available floor space.

Simonds Abrasive Co., Philadelphia, Pa., has received approval from the National Production Authority to carry out a program of new production facilities for the manufacture of vitrified and resinoid bonded grinding wheels.

(Please turn to page 302)

COMMERCIALLY IMPORTANT COPPER ALLOYS

WROUGHT

Fabricating brass or copper alloys?

If you're working with brass or copper alloys... or if you anticipate defense orders involving these metals... you'll want to get the new Chase book on Commercially Important Wrought Copper Alloys.

This book brings you helpful suggestions for selecting a copper alloy to meet any particular physical or fabrication specification or an alloy with a combination of desirable properties, such as high conductivity and free-cutting.

It contains 124 pages of data about the more common and useful wrought copper alloys including:

- *brass and copper terminology*
- *suggestions for selection and use*
- *forms available and typical uses*
- *weights* • *tolerances*
- *physical and fabricating properties*



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• The Nation's Headquarters for Brass & Copper

Albany†	Cleveland	Kansas City, Mo.	New York	San Francisco
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Chicago	Houston†	Newark	Rochester†	
Cincinnati	Indianapolis	New Orleans	St. Louis	(Sales office only)



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Because of the expense in making this book, we must limit its distribution to those directly concerned with the fabricating of metals. Please send your request on firm letterhead, giving your position or title.

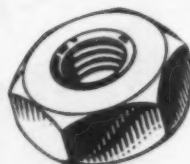
Be Double-Sure

ATLAS HEXAGON NUTS

**...are Double Chamfered,
Double Counter-Sunk**

You make double savings, too, with Atlas hexagon nuts. They require far less time and labor, cut costs, because Atlas nuts are double chamfered, double counter-sunk, free of burrs. Also large stock of bolts, screws and washers—steel, brass, stainless—available for immediate delivery. • ATLAS also offers facilities for the manufacture of special component parts.

For prompt quotations, submit your requirements, giving details, specifications and delivery dates.



AT-117A


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PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE COMPANY, INC.

Sterling Electric Motors, Inc., Los Angeles, Calif., has let contracts for the construction of a new \$1,000,000 plant on an 11-acre site in Van Wert, O. The new plant is to expand Sterling's gear manufacturing facilities for the production of precision gearing systems for the aircraft industry.

Lucas-Milhaupt Engineering Company, Cudahy, Wis., has opened a Chicago division to provide a consulting service on a national scale. The service will cover the application of notched-coil silver brazing and soldering rings and coined washers for armament production.

Brooks and Perkins, Inc., has purchased equipment and awarded contracts for the first building of a new plant in the north-west suburban area of Detroit, Mich. The first unit will be a jobbing-type mill to roll magnesium sheet from slabs. Plans for the future call for the integrating of all Brooks and Perkins operations on the site.

Kaiser Aluminum & Chemical Corporation has begun construction at its Jamaica, B.W.I. bauxite deposits to supplement present aluminum ore sources by 1,000,000 tons a year new capacity. The proximity of these reserves to Kaiser's Baton Rouge, La., alumina plant will reduce the shipping distance by more than one-half, compared to present sources.

Sierra Electric and Manufacturing Company, Los Angeles, Calif., a newly-formed concern, has purchased McDonald Manufacturing Company, pioneer plastics and electrical manufacturer in the west.

Electronic Devices, Inc., Brooklyn, N. Y., has purchased Precision Rectifier Corporation.

American-Marietta Company, Chicago, Ill., has acquired The Arco Corporation, Cleveland, O.

1 1 1

BRAZE-CLAD STEEL STRIP SIMPLIFIES SILVER BRAZING

To simplify the brazing of steel joints and at the same time guarantee their unqualified perfection, the American Silver Company, Inc., of Flushing, N. Y. is now manufacturing Braze-Clad low carbon steel strip.

This steel strip is clad with silver brazing alloy on one or both sides, in any thickness ratio and melting range, to suit the requirements of each particular brazing application.

The steel surface being precoated evenly with the brazing alloy, no pre-placements are necessary, and every joint is assured of a complete and uniform spread of alloy. In conventional brazing practice, where preplacements of silver alloy strip are used, voids leading to joint failures are known to occur frequently. This is due to the fact that the brazing alloy, when melted, initially draws up into a liquid ball and then

(Please turn to page 304)



We Haven't Made Them This Big... *YET,*

but this fantasy is simply to remind you that we do manufacture the biggest line (in both types and sizes) of welding elbows on the market.

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Same radius as ASA but tangent equal to 25% of nominal pipe size on each end. Saves pipe, layout and welding time. Costs no more than ASA. Sizes to 24".

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Dimensions conform to applicable size range of American Standard for Butt-Welding Fittings, ASA B16.9. Tolerances much less than allowable. Sizes to 26".

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(Continued from page 302)

spreads unevenly over the joint surface, resulting in the formation of oxide islands and gas pockets, as well as the presence of flux inclusions.

Braze-Clad joint surfaces, being pre-diffused with the silver brazing alloy, eliminate the need of such preplacements as wire rings, sheet washers and blanks, and thus reduce considerably the tedious cleaning and fluxing operations before brazing. The pre-diffusion also controls the flow of the metal during brazing and eliminates the necessity of cleaning off any overflow or unwanted fillets. The heating cycle is reduced since there is no need to depend upon the unpredictable capillary flow to distribute the brazing alloy.

Therefore, whenever a brazed joint must be perfect—where it must stand a severe pressure test—where preplacements are difficult and slow—or where a joint design is too intricate or inaccessible for conventional brazing, Braze-Clad steel will prove most useful. It is available in all thicknesses down to .005" and in any width up to 4".

1 1 1

USE OF RUBBER-PHENOLIC COMPOUNDS CUTS COSTS

Costs have been reduced 75% on cylinder shields and handles for the one-man portable tree saw manufactured by the Precision Equipment Co., Danbury, Conn., by molding the parts from G-E rubber-phenolic compound produced by



Cylinder shield and handle are molded of rubber-phenolic plastics

General Electric's Chemical Division, Pittsfield, Mass. By use of the compound, handles and shields come from the molds ready for installation, and being lighter in weight than alloy formerly used, decrease the weight of the saw. In close contact with the hot cylinder head, the rubber-phenolic cylinder shields have the required heat resistance for the application, and because of their exceptional resistance to impact—5 to 10 times that of conventional phenolics, the engine is protected from abuse in service.

G-E rubber-phenolic compounds are manufactured in four grades—woodflour-filled, asbestos, cotton flock, and fabric filled. The use of nitrile rubber impacts their resistance to shock and blows.

(Please turn to page 306)

years of experience ...



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EXPERIENCE is the salt that seasons every product. *Illinois Gears* are richly seasoned with the experience of hundreds of highly skilled gear craftsmen. *Illinois Gears* are produced on the newest and finest gear making equipment obtainable. *Illinois Gears* are produced under experienced and competent supervision. For one gear or 10,000 gears, write, wire or phone:

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They have a steel backing for strength, and bonded to it a bearing surface of babbitt. They are light in weight and low in unit cost. This is the type of sleeve bearing used for main, camshaft and connecting rod bearings in almost all modern automobiles. As you know, these bearings will perform perfectly for many thousands of miles under all the punishing conditions of automotive power and speed. Johnson Babbitt-on-Steel Sleeve Bearings are used, also, in trucks, buses, tractors, diesel engines and electric motors. Fifty years of research and experience have gone into the development of this and other types of Johnson Sleeve Bearings. Manufacturers looking for light weight, low cost bearings are invited to consult Johnson engineers. Write, wire or phone.

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SPIRAL LIGHTNING ARRESTER

Shown here with a model of a new high-voltage lightning arrester he designed is A. M. Opsahl of the Westinghouse Electric Corporation. Only half as tall as former high-voltage arresters that required large structural steel supports, the new type SV station type



arrester features a zig-zag arrangement of the arrester units that eliminates the need for such supports. Lightning surges are carried groundward through a series of arrester units that spiral down between the three vertical columns. For use on 230-kv lines, the arrester stands 10 feet high, and is more efficient, less costly to install, and more easily maintained than previous designs.

1 1 1

MANUAL ON SAFETY IN MANUFACTURING INDUSTRY

Practical ways to prevent industrial accidents and fires are contained in the new edition of the National Safety Council's 800-page "Accident Prevention Manual for Industrial Operations."

Popular response to the first edition, issued four years ago, was so great that work was begun immediately on an expanded second edition. Just off the press, it contains 256 more pages and 11 more sections than the first. The book is confined principally to safety in the manufacturing industry, and is based on the premise that a major proportion of all accident causes are common to all industry.

Subjects covered include permanent structure and plant layout; maintenance and maintenance crews; boilers; pressure vessels; refrigeration equipment; machine guards; materials-handling hazards; hand and portable power tools; welding and cutting; electrical hazards; flammable liquids; fire prevention; fire control; personal protective equipment; industrial health engineering; industrial poisons; medical services in industry; safety organization and training; accident records, analysis and costs. One of the new sections, "The Safety Man's Resources," is a bibliography of safety organizations and publications.

The manual is bound in green and the cover has a bold design stamped in gold. Detailed description and price may be obtained by writing the National Safety Council, 425 North Michigan Avenue, Chicago 11, Ill.

(Please turn to page 308)

NOW...

ONE PASS

drills hole **3 1/2 in.** deep
in **18-8 stainless steel**

This was a slow and difficult job. There was considerable tool breakage, even though the operator made several pull-outs for chip relief on each hole. ♦ When a *Cleveland* Service Representative was called in, he carefully analyzed the set-up . . . and recommended the CLE-FORGE High Speed Drill illustrated at the left. This is a stock drill with a heavy web, and with flutes designed for easy chip removal. Now—because of the greater strength and rigidity of this drill—the deep holes are drilled in one pass. Breakage has been greatly reduced. ♦ Whenever *you* have a drilling problem, get the advice of a *Cleveland* Service Representative. Contact our nearest Stockroom, or . . .

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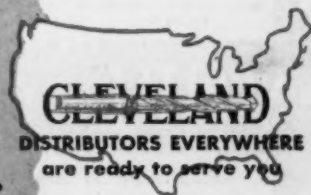
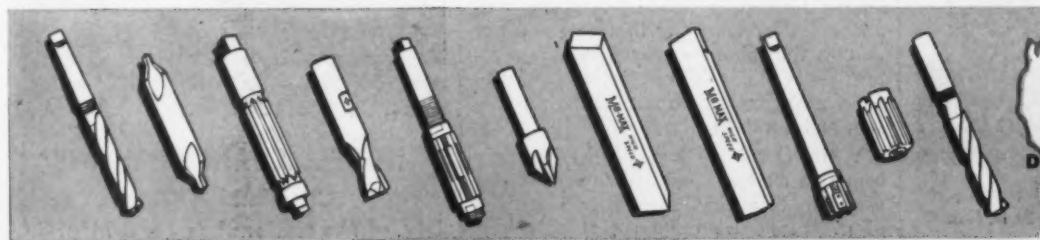
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OCTOBER, 1951

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307



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to economize...

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The price of a fastener is very low compared to other components that go into your product. But figured in terms of assembly time, the *final cost* of an inferior fastener can be many times its price.

That's why we say it pays to economize with good fasteners. Scovill makes good fasteners.

Scovill fasteners are made on **special order only**; no "bin" stock is carried. They are "custom-made" for each job.



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NEW GLASS CAN BE PRECISION MACHINED BY CHEMICAL PROCESS

A new kind of glass which can be precision-machined through the use of ultra-violet light, heat and hydrofluoric acid to form intricately cut patterns of any desired shape and depth was described at the International Chemical Congress in New York City by S. D. Stookey, senior research associate of Corning Glass.

This new glass is the latest in a series of photosensitive compositions first announced by Corning in 1947 to produce permanent three-dimensional photographs in glass in a variety of colors. To the new composition, which is a special kind of photosensitive opal glass, Corning has adapted an equally new process of "chemical machining", which produces without the aid of mechanical tools, lace-like patterns hitherto considered impossible.

The first step in the process is the printing of a design in the glass, using an ordinary photographic negative and ultra-violet light. Development is then accomplished by heating the glass to 1200 degrees Fahrenheit for the required length of time, usually about two hours. At this stage, a milk-white image appears in the otherwise transparent glass.

Next, the glass is immersed in a solution of hydrofluoric acid until the white areas are eaten through and removed, leaving the remaining unexposed glass in the exact form of the original pattern.

By varying the length and intensity of light exposure through the photographic negative, the depth of acid penetration in the glass can be accurately controlled from shallow etching to complete erosion. In this way, sculptured figures or contoured shapes can be made by using a continuous tone negative with proper degrees of shading.

Since chemical machining involves no mechanical stress, patterns, otherwise too complex to produce in glass or any other material without long and tedious work by skilled craftsmen, can be simultaneously reproduced in any number and with photographic accuracy by this method.

Chemical machining is especially suited to perforating holes of any shape having diameters of only a few thousandths of an inch and numbering up to several thousands per square inch. Designs as irregular as lacework can be photo-etched as readily as simple straight line patterns.

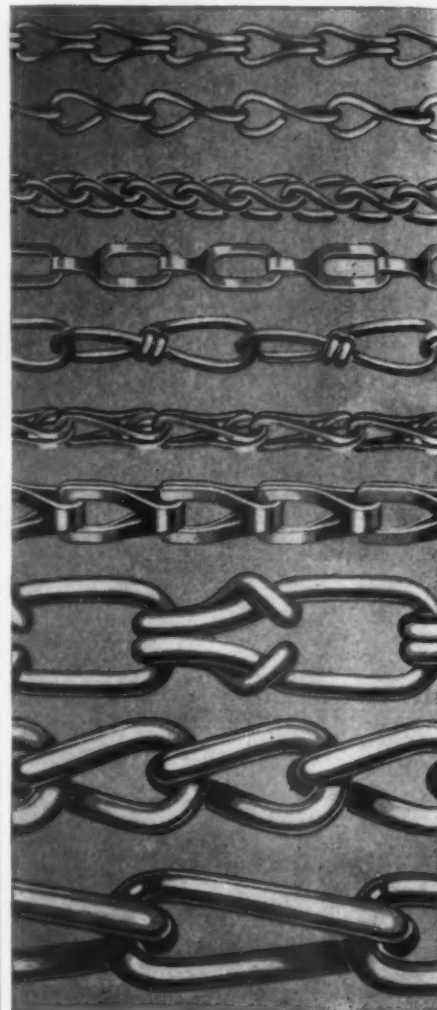
The versatility of the process has already been demonstrated in the manufacture of "printed" electrical circuits for electronic instruments. By using a photographic negative, in a single operation, a sheet of glass is cut into multiple pieces, each of proper shape and size, and each having identically etched circuit patterns and holes for fastening to a chassis. The pattern thus photo-engraved in each piece of glass is filled with conducting metals to form an electrical circuit of high precision and durability.

While Corning Glass Works has only begun to explore the possible commercial uses for this new chemically machined glass, it appears certain that this new product will hasten important further advances in the field of electronics.

HODELL CHAIN

Serves the Best

Hodell makes a type and size of top-quality chain to meet practically every industrial requirement. Hodell Chains conform to Government Specifications, too. A few of the many types available are illustrated below. And when you need special chain assemblies made to your specifications, it will pay you to contact Hodell. Send for industrial catalog, giving full information on the complete Hodell line.



HODELL CHAIN COMPANY

Cleveland 3, Ohio
Div. of The National Screw & Mfg. Co.



Want a tubing that's a bear for punishment? Look into Bundyweld!



Bundyweld Tubing is double-walled from a single strip. Exclusive, patented beveled edge affords smoother joint, absence of bead, less chance for any leakage.

Here's the best-known small-diameter tubing of them all.

It's Bundyweld, preferred in industry and defense wherever tubing parts must ride rough herd through vibration, stress, shock or strain. The reason is simple . . . and exclusive. Bundyweld, the multiple-walled

type of Bundy® tubing is double-rolled from a single strip with inside beveled edge. No other like it anywhere.

For information on availability, for help in design or fabrication of any tubing part, why not come to headquarters for small-diameter tubing today?

Bundy Tubing Company

DETROIT 14, MICHIGAN

World's largest producer of small-diameter tubing
AFFILIATED PLANTS IN ENGLAND, FRANCE AND GERMANY

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HIGH CARBON
STAINLESS
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You draw the Shape
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the Wire

—the way you want it
for your production—whether
it's ALL of your product,
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Cross-sectional areas up
to .250" square; widths to $\frac{3}{8}$ ";
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not exceeding 6 to 1.

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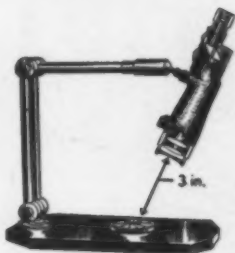
PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE

Completely Adjustable Electric Deodorizer

Scent-Flo is a new electric fan-operated deodorizer that is adjustable for complete control over uniformity and quality of air freshness. The maker, Surco Products, Inc., 918 Wylie Ave., Pittsburgh, Pa., says the unit neutralizes and destroys odors and provides just a breeze of pleasant air. It can be installed in a matter of minutes. Made of aluminum and finished in three colors—red, green or gold. Surco says current used adds only about 5¢ per month to the electric bill.

No. 148 — Use Coupon on Page 310

Microscope Views From Any Angle



Looking at things from every angle is a good policy, and now it can be done in the laboratory. A new microscope with an all-position universal mount is available from Edmund Scientific Corp., Dept. 73, Barrington, N. J. Joint tension of the mount is fully adjustable. Prism erectors give the viewer an erect image instead of the usual upside down picture. Three-element color corrected objective is 1" diameter. Working distance from objective to object is 3", permitting work to be

carried on "under power" while looking through the instrument. The microscope is 6½" long, with a base 7" x 9". Manufacturer stresses low cost.

No. 149 — Use Coupon on Page 310

High-Tensile Electrode For Cast Iron Welds

Eutectic Welding Alloys Corp., 40-40 172nd St., Flushing, N. Y., says its new electrode for cast iron welding, EutecTrode 26, is a big improvement over conventional ferrous electrodes. For the first time, Eutectic says, the carbon content in the deposited metal is evenly distributed. The deposited metal is thus similar to a high tensile, high carbon steel, thereby increasing the tensile strength of the weld. Complete details, technical specifications and data sheets available.

No. 150 — Use Coupon on Page 310

Long-Life, High-Speed Cutting Tools

Long service life and the ability to handle high speeds and extremely heavy cutting loads are advantages of new Superweld cutting tools available from A. Milne & Co., tool steel distributors. The line features solid high speed steel heads of equal section to the tool shanks. The high speed heads are joined to the shanks by electrical butt-welding. This equality of length provides far more usable cutting steel than a tipped tool. It is even possible to change the shape of the tool by grinding. The tools are supplied ready to use. Available in 31 standard shapes. Milne is at 745 Washington St., New York, N. Y.

No. 151 — Use Coupon on Page 310

READER SERVICE COUPON

OCTOBER, 1951

MAIL TO:
PURCHASING—Reader Service Dept.
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I want more information on New Products Numbers.

148	149	150	151	152	153	154	155	156	157	158	159
160	161	162	163	164	165	166					

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***SPEEDER-UPPERS* on the production line**

In factories, warehouses, mills and on shipping platforms, thousands of these husky materials handlers, powered by Exide Batteries, are upping production, cutting time, saving money.

Where dependability is vital, you'll find Exide Batteries.

Exide Batteries provide motive power for mine haulage units.

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FIRST EXAMINE . . .

**THEN SELECT
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WITH ALL

**5 SUPERIOR
FEATURES!**

1. STRONG electro-forged construction for easy installation.

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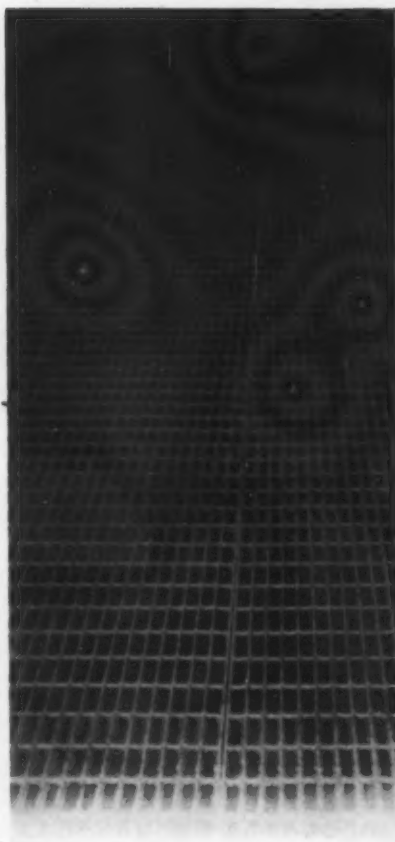
3. EASY TO MAINTAIN...paint reaches entire surface.

4. SELF-CLEANING, no sharp corners to clog.

5. SAFE footing at all times with twisted cross bar.

Write for complete specifications

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OF BLAW-KNOX COMPANY**
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Antiseptic Wall Wash

A new antiseptic wall wash, Fungitox, kills or inactivates existing molds or mildew. It also provides a colorless residual film that inhibits further growth, according to the maker, Fungitrol Chemicals, Inc., Hillside, N. J. It has a mild, agreeable odor, and uses no harsh caustic or toxic chemicals. Furnished in concentrated form, it is generally applied by brush or sponge. Fungitrol says it is non-irritating, does not discolor painted surfaces, and may be used on wood, concrete, plaster, wallboard, canvas and other fabrics. Suited for use in canneries, packing houses, textile mills, etc.

No. 152 — Use Coupon on Page 310

Inexpensive Spray Gun Produces Fine Finishes



Cutaway photo (above) shows quality features of a new, inexpensive, lightweight spray gun Model 29, made by Binks Manufacturing Co., 3122 Carroll Ave., Chicago, Ill. Cartridge-type air valve (A) can be quickly replaced. Brass and steel material passage (B) protects the aluminum casting from corrosion and erosion caused by certain paints and other fluids. Air enters the gun through an inlet in the bottom of the handle (C), distributing hose weight properly and making manipulation of the gun easier. Model 29 can also be furnished with the air inlet at back of the gun (D). High quality finishes are obtainable with the gun, because it uses nozzle set-ups that are standard on most of Binks heavy duty production spray guns.

No. 153 — Use Coupon on Page 310

Rust-Proofing Machine

A rust-proofing machine with the unusually high capacity of 500 sq. ft. of conveyor space per hour has been introduced by Industrial Washing Machine Corp., New Brunswick, N. J. The machine, Model CT-RP, first sprays work with a rust preventative, then a built-in, explosion-proof infra red oven quickly dries it.

(Please turn to page 314)

• "you name it...I helped make it!"



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Glue for antagonistic surfaces

I'm never perplexed very long. About glue! Even when laminating difficult and varied surfaces that *bristle* with resistance. Like acetate, lacquer and polyethylene-coated kraft. Or pliofilm, acetate and polyethylene sheeting. For advertising displays. And packages. Emulsion adhesives dry to a clean, colorless, transparent film. Eliminate inflammable solvents. Reduce drying time from days to several hours.

... and listen!

• "you name it... I helped make it!" Watch label adhesives at work. Protecting product identity by holding tight to cellophane, foil or paper labels. And to bottles that often reach labeling machines greasy, wet or hot. Filled with mineral oil, olives, salad dressing. The NATIONAL touch is everywhere. Glue applied through imaginative research and service. To every item of daily life.

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ADHESIVES

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Versatile Laminating (RESYN) Adhesives

A single series of adhesives can handle any or all of these laminations, including those required in various U. S. GOVERNMENT SPECIFICATIONS.

CELLULOSE ACETATE

TO FOIL, FOR HEAT-SEALED ENVELOPE (U. S. Govt. Spec. MIL-C-1019B, JAN-F-1034, MIL-B-1112A, MIL-R-1504, MIL-R-2406, MIL-F-2409, MIL-F-2413)

TO PAPER

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CELLOPHANE

(Plain and Moisture Proof)

TO CELLOPHANE

TO PAPER

TO BOARD

TO GLASSINE (U. S. Govt. Spec. MIL-C-10022)

TO FOIL (U. S. Govt. Spec. MIL-C-10022 and MIL-C-10928)

FOIL

(Aluminum)

TO LACQUER IMPREGNATED KRAFT PAPER FOR HEAT-SEALED BAG (U. S. Govt. Spec. JAN-F-1034, JAN-B-1041, MIL-R-1500 and MIL-R-1504)

TO BLEACHED KRAFT OR SULPHITE PAPER (U. S. Govt. Spec. MIL-C-10928)

TO DRY WAXED SULPHITE PAPER OR GLASSINE (U. S. Govt. Spec. MIL-C-10022)

SARAN

TO PAPER

TO BOARD

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No valves to turn, no nozzles to adjust; just point and press your thumb and Randolph's cloud of snowy CO₂ kills fire completely!

Non-damaging Randolph CO₂ evaporates without a trace, is non-toxic, won't conduct electricity, deteriorate or freeze. And *all* Randolph Models are Underwriters' Approved.

A complete line of extinguishers and automatic systems

Learn how Randolph gives your plant panic-proof, positive fire protection! Write Randolph Laboratories, Inc., 1 E. Kinzie St., Chicago 11, Illinois.



RANDOLPH SIMPLIFIED FIRE EQUIPMENT

(Continued from page 312)

The work is then cooled to permit immediate handling. The continuous conveyor is kept free of residue by a special rotating brush and detergent spray, eliminating stops for cleaning. Safety features include automatic C-O 2 system, and fully electrical operating controls. The machine is adaptable for various shapes and sizes of work.

No. 154 — Use Coupon on Page 310

Insulated Liquid Container



The portable Igloo water container, made by Bettis Corp., 320 So. 66th St., Houston, Tex., will keep water cool or coffee hot a full day and longer. The galvanized sides are corrugated and seams are double folded to withstand rugged handling in the field. Made with or without a push-button faucet which is inset flush with the side to keep from being broken off. Two heavy carrying handles protect the top cover, which is removed for filling. Insulating material between inner and outer walls is Dow Styrofoam. The container is available in 1½, 3, 5, and 10 gal. sizes.

No. 155 — Use Coupon on Page 310

Electrical Insulation Saves On Materials

Johns-Manville, 22 East 40th St., New York, N. Y., is offering Quinterra Type 3, an asbestos-base, silicone-treated, high temperature electrical insulation. It is a Class H insulation as defined by A.I.E.E. standards, for service at a temperature of 180C. The product is used for both inter-layer and wire wrapping insulation. It is adaptable to a wide range of electrical devices including air cooled, inert gas, and silicone filler transformers. J-M lists as its advantages: Savings on materials, a greater factor of safety and the opportunity for more compact design.

No. 156 — Use Coupon on Page 310

(Please turn to page 316)



A Georgia-Pacific "new dimension" in construction

THEY MOLD 'EM MONOLITHIC DOWN IN TEXAS

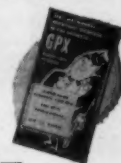
Here's a strip tease that'll make your eyes pop out . . . that is, if you go for figures.

Down Texas way recently they stripped the last forms off just about the finest monolithic structure in the U. S. It's the Thomas J. Lipton, Inc. building at Galveston, where clean lines and a smooth exterior bear mute testimony to the efficiency of GPX Plastic-faced Plywood.

Walls, floors and ceilings are all concrete . . . poured in forms of GPX . . . to create, from movable molds, a one-piece structure. Thanks to the satin-smooth, armor-hard surface of GPX, ceilings "set" so smoothly that no plastering was needed. Costly hand finishing was virtually eliminated.

In all, 200,000 square feet of surface area was poured in 32,000 square feet of GPX. And the same panels continued to make still further savings for the contractor on his next job.

Other grades of Georgia-Pacific's Plastic-faced Plywood are helping to cut costs and do a better job in countless industrial applications. If you have a job where smoothness, lightweight strength and ruggedness pay off, send for this new folder on GPX—write Georgia-Pacific Plywood Company, 630 North Capitol Way, Olympia, Wash., or get in touch with your nearest Georgia-Pacific office.



GEORGIA—PACIFIC
P L Y W O O D C O M P A N Y

OFFICES OR WAREHOUSES IN: Augusta, Birmingham, Boston, Chicago, Columbia, Louisville, Memphis, Nashville, Newark, Olympia, Orlando, Philadelphia, Pittsburgh, Portland, Raleigh, Richmond, Savannah



DOUGLAS FIR PLYWOOD • HARDWOOD PLYWOOD • GPX • SOUTHERN & WESTERN LUMBER • DOORS

Which ALLOY FASTENINGS are best for your needs?



STAINLESS STEEL (Type 431) T-bolts by Harper are the vital connecting links of the V-bands that fasten the tail pipes to jet engines. In this service where terrific speeds and extreme heat and corrosion are real problems, lasting strength and corrosion resistance are of life and death importance.



PURE NICKEL machine bolts and nuts are needed by the thousands in the assembly of bubble caps and trays in chemical plant distillation towers. Here, 7-day-a-week operation, high temperatures and corrosive acids make heavy demands on equipment—good reasons why this manufacturer specifies Harper Everlasting Fastenings.



COPPER studs—made as “specials” by Harper—have the conductivity and corrosion resistance so necessary for the tap changer assemblies in power line transformers. Unattended, exposed to the worst weather—this equipment must be dependable.

**HARPER knows because
HARPER makes them all!**

Whatever *your* product or problem may be—if it requires highest quality bolts, screws, nuts, rivets or fastening accessories in any of the non-ferrous metals or stainless steels—Harper can help you.

Over 7000 different items in stock and ready for delivery from warehouses and distributors coast to coast—backed by complete production facilities of the country's largest manufacturer specializing in non-ferrous metals and stainless steel fastenings. Your problems are welcomed here. Mail the coupon today.

SPECIALISTS IN
ALL NON-CORROSIVE METALS

HARPER
EVERLASTING FASTENINGS

Chief Metallurgist—The H. M. Harper Co.
8222 Lehigh Ave., Morton Grove, Ill.

() Send Catalog () Our problem is:

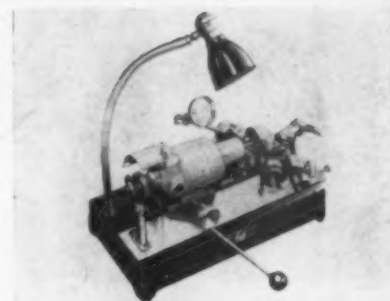
Name.....
Address.....

Throw-Away-Bottle Marking Unit

Magic Marker is a throw-away-bottle marking unit than can be used for marking a great variety of surfaces with instant-drying, water-proof ink. It writes with a felt tip which is designed to permit fine, medium and bold one-stroke marking. When the ink supply is exhausted, the nib section is unscrewed from the bottle and attached to a fresh refill. It is made in 9 colors, including black and white. Manufactured by Speedry Products, Inc., 19 Rector St., New York, N. Y.

No. 157 — Use Coupon on Page 310

Drill Grinder Easily Operated; Offers Savings



Small drill users with an eye out for cost-saving, higher production and better use of manpower will be interested in a new drill grinder announced by The Dumore Company, Racine, Wis. Dumore says the grinder, designed for 2-lip twist drills, from No. 70 to $\frac{1}{4}$ ", either straight or tapered shank, can be used successfully the first time by untrained help. It is said to be so fast that sharpening for an entire shop often can be handled by a tool crib apprentice. Other features are accuracy, rugged construction, and speed and ease of set-up. The quick-locking chuck has an infeed for finish cuts on fine resharpener work, for very small drill sharpening, and for extra speed when extreme changes in point or clearance angle are required.

No. 158 — Use Coupon on Page 310

Quick-Set Selective Numbering Heads

Numberall Stamp & Tool Co., Huguenot Park, Staten Island, N. Y., has brought out new numbering heads, Model 83, for stamping operations requiring quick selective numbering. Wheels are engraved with direct sight figures at front of machine, set to the required character by turning knobs. By pushing

(Please turn to page 318)

Maintenance, Production, Purchasing and Front Office can see Eye to Eye on this "Baby"



It's a TOUGH, LONGER-LASTING BULL DOG V-BELT!

Yes, a Bull Dog V-Belt has something for everybody. Your engineers and production heads who have enough on their minds already with shortages and the necessity for increased output will appreciate the SPECIALLY ENGINEERED BWH CORD SECTION and its high tensile strength. They'll get the superior load carrying capacity from BULL DOGS and the ability to absorb shock loads that's needed.

Your maintenance men (engineers, too) will note the QUALITY CONTROLLED COMPOUNDS developed by BWH which run cooler and do not crack or deteriorate under severe flexing. They'll probably note also the MINIMUM STRETCH — due to a new and exclusive technique in processing Bull Dog Cords. They'll be *sure* to note the less slippage, fewer adjustments, longer belt life that results.

Your maintenance men will also okay the Bull Dog V-Belt's DURABLE COVERS. They're made of closely woven, heavy, bias-cut fabric that takes the torturous wearing action where the belt meets the sheave — seals it against the penetration of dirt, grease and moisture.

With it all adding up to less money *out* in belt repairs and replacements and more money *in* from maintained and increased production . . . don't you think Purchasing and the Front Office will be glad to go along?



TOUGH PROBLEMS INVITED!

Ask us or your nearest BWH distributor about your power transmission belting, conveyor belting or hose problems. We're specialists in making mechanical rubber products work better, longer.

Another Quality Product of

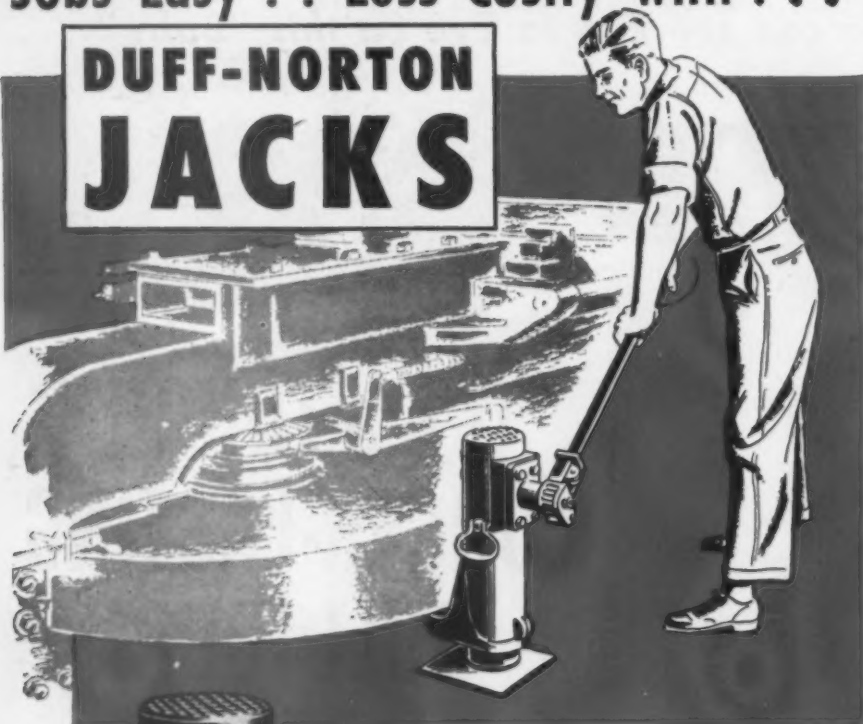
BOSTON WOVEN HOSE & RUBBER CO.

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.

Make Heavy Lifting and Lowering Jobs Easy . . . Less Costly with . . .

DUFF-NORTON JACKS



Those heavy lifting, lowering, pushing and pulling jobs around your plant . . . such as unloading, placing or moving heavy machinery . . . repairing lift trucks, cranes and heavy equipment . . . all can be done easier and more economically with the right Jacks from the Duff-Norton complete line of jacks for every industrial requirement. For complete data, clip and mail the coupon below.

B-2522

*Fill in this
Coupon and
Mail
Today*



THE DUFF-NORTON
MANUFACTURING CO.
Pittsburgh 30, Pa.

- ☐ Please send a copy of Catalog 203X showing jacks for industrial lifting and lowering jobs.
- ☐ Have representative call.

Name and Title _____

Company _____

Address _____

City _____ Zone _____ State _____

P-2



THE DUFF-NORTON MANUFACTURING CO.

MAIN PLANT and GENERAL OFFICES, PITTSBURGH 30, PA. — CANADIAN PLANT, TORONTO, ONT.

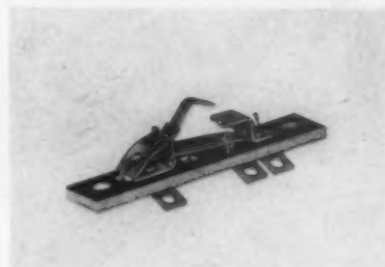
"The House that Jacks Built"

(Continued from page 316)

the knobs right or left any one of the wheels may be engaged. The indexed wheel selector serves as a positive stop for every wheel. Letter wheels, with up to 11 letters and a blank on each wheel, can also be supplied. Made in sizes from 1 to 15 wheels. Bulletin 83-48 available.

No. 159 — Use Coupon on Page 310

Low-Cost Standard Snap-Action Switches



Two new standard model snap-action switches made by Cherry-Channer Corp., 1488 Skokie Blvd., Highland Park, Ill., have no expensive moulded parts, thus offer cost savings to makers of automatic equipment. They employ the over-center coil spring construction, which permits a wide range of actuating pressures merely by specifying a spring element of the proper characteristics for any job. Model 2000 has a release force of 5.5 oz. and requires an operating force of 7.5 oz. Model 2001 has a release force of 2.7 oz. and requires an operating force of 4 oz. Special adaptations of the models are available, offering variations in contact size and materials, spring pressures, actuator shapes, mounting holes and multiple mountings on a single panel.

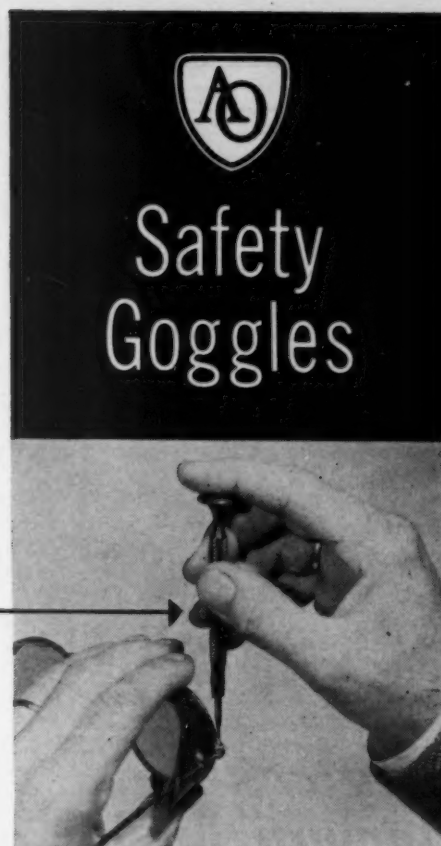
No. 160 — Use Coupon on Page 310

New Wet-Blast Machine

Suggestions from officials in many metalworking plants helped American Wheelabrator & Equipment Corp. design a new wet blast machine designed to meet their special requirements. Among the features of the wet blaster, called the Liquamatte, is a vertical pump for slurry recirculation. It is adaptable to rugged service, and because of its position eliminates all suction piping, valves, fittings, and labor for removing them for inspection. The machine has a conveniently low work ceiling, but the bottom is high enough off the floor to make good

(Please turn to page 320)

NEW WELDER'S GOGGLE with Adjustable and Removable Side Shields



The leather side shields of this new goggle are *adjustable* to assure a close, comfortable fit so that no part of the eye area is exposed to danger. Being *removable*, also, the side shields can be cleaned or replaced by simply loosening the end piece screws. With Calobar lenses, the 3081A Goggle is recommended for welders' wear under helmets, welders' helpers, supervisors, apprentices — anyone in the vicinity of electric welding — furnace men, molders, brazers and others. With clear lenses, the 3081A is recommended for front and side impact protection when chipping, grinding, riveting, spot welding and on hand tool and machine operations. Your nearest AO Safety Products Representative can supply you.

Remember, whether the hazard is particles from the work, glare, heat, ultraviolet or infrared, cinders, dust or wind there is an AO Goggle that meets the need.

QUICK FACTS

- Side shields of soft leather for comfort. Protect against heat, harmful light, flying particles.
- Sturdy cylinder bridge and reinforcing bar covered with leather.
- Temples are On-Center, easily adjusted, perspiration proof, insulated. Both temples and endpiece screws are AO patented "Evertite" construction. They *keep tight*.
- Endpiece is streamlined — wide bearing surface minimizes temple drop. Screw heads countersunk—won't snag.
- Lenses are Super Armorplate or 6 Curve Super Armorplate in medium, dark or extra dark Calobar shades. Also available in clear Super Armorplate or clear 6 Curve Super Armorplate. When ordering, specify type of lens and shade.

American  Optical
COMPANY
SAFETY PRODUCTS DIVISION

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES



Fuller's "Hungry" Duster Gobbles up Dust!

You will find a Fuller Dry Duster more economical than dust cloths. Fuller Dusters are built of our special cotton yarn — whose millions of tiny fibrils reach out and hold (instead of scattering) huge quantities of dust.

In Fuller Dry Dusting Mops you will also find this special yarn, developed by our laboratory and produced under its supervision.



3554 MAIN ST., HARTFORD 2, CONN.
In Canada: Fuller Brush Co., Ltd., Hamilton, Ont.

(Continued from page 318)

housekeeping possible. The machine is intended to perform work for which dry blasting is too severe. American Wheelabrator is located in Mishawaka, Ind.

No. 161 — Use Coupon on Page 310

Automobile Battery Operated Stacker



A standard 6-volt automobile battery supplies the power for this combination fork lift-stacker and hand truck with elevating platform. It is capable of moving, lifting, and stacking loads up to 750 lbs. The little drain placed on the battery under capacity uses is replaced by the built-in charger during off-hours. The stacker will lift capacity load 55" in 6 seconds. Use of the standard battery and the charger puts the unit in the low-price field. Platform is 21" long and 18" wide as standard. Bulletin P-14 available. Clark-Hopkins Equipment Corp., 1124 Spring Garden St., Philadelphia 23, Pa.

No. 162 — Use Coupon on Page 310

Combination Burner Uses Gas or Oil

Good insurance against production losses caused by interruptions in gas service during severe weather is a new combination gas-oil burner. The Twinfuel, made by Norman Products Co., 1150 Chesapeake Ave., Columbus, O., switches automatically from gas to oil and back. The change is determined by an outside thermostat set at the temperature point at which the utility expects service difficulties. The burner can also change fuels automatically depending upon drops or rises in pressure of the gas line.

(Please turn to page 322)

TRI-LOK



"A
STRONG STEP
TO SAFETY"

Each Tri-Lok step consists of a panel of Rectangular, Diagonal, or U-type Tri-Lok flooring in any desired width, length, depth, and bar spacing.

SAFE—checker plate nosing bars make each step stand out clearly. Abrasive edging also available.

CLEAN—Clogless, rivetless Tri-Lok joint prevents accumulation of dirt, moisture, rust.

STRONG—added strength provided at maximum load contact by shape and rigidity of nosing bar.

Write today for bulletin NY-1103

DRAVO CORPORATION

National Distributor for the
Tri-Lok Company

Dravo Bldg., Pittsburgh 22, Pa.

Sales Representatives
in Principal Cities



shake hands
with your friends
this christmas



CHRISTMAS will soon be here, and you're probably wondering NOW what you can do to send greetings to every one of your business and personal friends in an inexpensive, yet friendly manner.

KAYDON HOLIDAY GREETINGS convey the warmth of your friendship with colorfully illustrated lithographed subjects. All cards are imprinted on the inside with your name and sentiment you choose... giving the impression that the cards were made up especially for you.

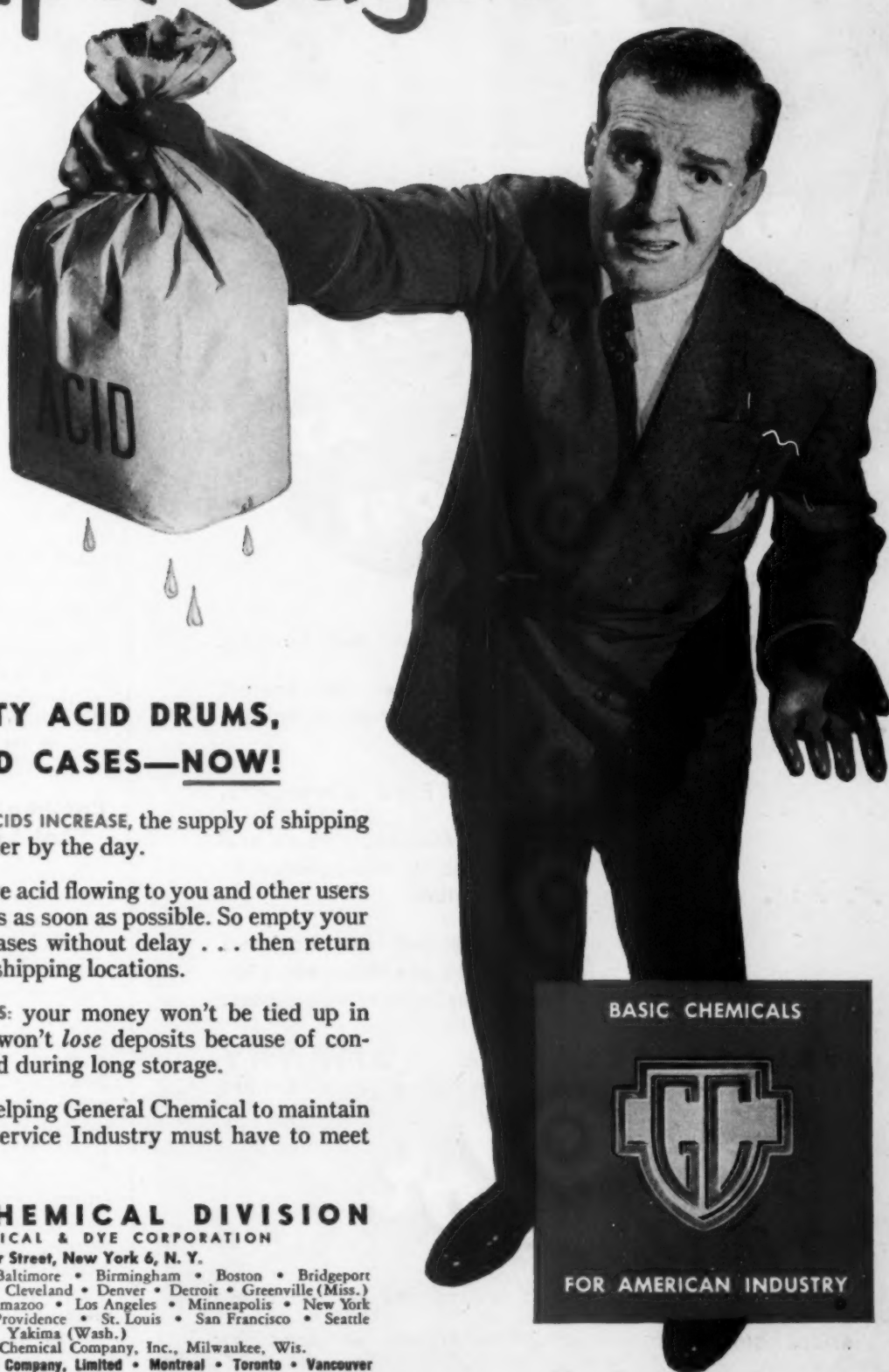
We'll be glad to send you sample cards for your choice, together with prices from 100 up. Will you use the coupon, please, or your own letterhead.

Mail this coupon for FREE SAMPLES!

Kaydon Art Publishing Co. P-10
314 Hyslip Avenue, Westfield, New Jersey
Send me FREE, samples of Kaydon Art Christmas Cards, and all information.

Name _____
Address _____
Company _____
City _____ Zone _____ State _____

You Can't Ship Acid in Paper Bags!



RETURN EMPTY ACID DRUMS, CARBOYS AND CASES—NOW!

AS THE DEMANDS FOR ACIDS INCREASE, the supply of shipping containers grows smaller by the day.

YOU CAN HELP keep more acid flowing to you and other users by returning containers as soon as possible. So empty your drums, carboys and cases without delay . . . then return them promptly to the shipping locations.

YOU'LL SAVE TWO WAYS: your money won't be tied up in deposit charges; you won't *lose* deposits because of containers lost or damaged during long storage.

Most of all, you'll be helping General Chemical to maintain the prompt, efficient service Industry must have to meet today's demands.

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Offices: Albany • Atlanta • Baltimore • Birmingham • Boston • Bridgeport
Buffalo • Charlotte • Chicago • Cleveland • Denver • Detroit • Greenville (Miss.)
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Philadelphia • Pittsburgh • Providence • St. Louis • San Francisco • Seattle
Yakima (Wash.)

In Wisconsin: General Chemical Company, Inc., Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

BASIC CHEMICALS



FOR AMERICAN INDUSTRY

THIS BALDOR

BALL-BEARING

Streamlined

MOTOR



**GIVES YOU EXTRA
FEATURES AT
NO EXTRA COST**

1

Totally enclosed . . . ball-bearing.

2

Externally ventilated, fan-cooled, non-clogging. Dust-proof, splash-proof, lint-proof.

3

Standard NEMA dimensions.

4

Corrosion-resistant . . . inside and out. Specially impregnated to resist moisture.

5

Standard and face mounted end-plates, interchangeable for vertical or bracket type motors.

BALDOR ELECTRIC COMPANY

4253 DUNCAN AVENUE • SAINT LOUIS 10, MISSOURI

Baldor

MOTOR SPECIALISTS FOR 30 YEARS

BAIRD MOTOR AND TOOL AND SERVICE IN MORE THAN 200 TRADE CENTERS

(Continued from page 320)

In industrial production heating operations the oil burner can be used for the initial start up of each firing period. The burner is made in 7 sizes from 80,000 to 3,000,000 Btu capacity.

No. 163 — Use Coupon on Page 310

Elevator Sill Operates Like Drawbridge



You can protect your freight elevators from a lot of damage with a new metal sill that bridges the gap between elevators and building floors, platforms or motor trucks. The Model E, made by Alexander Sill Co., 970 Milwaukee Ave., Chicago, Ill., becomes an integral part of the elevator and gives sill protection on every floor where the elevator stops. When sill is down, the elevator is locked. It can move only when the sill has been closed. When the sill is closed, it is in upright position and acts as a protective gate so that trucks and carts cannot roll off the elevator while it is in motion. Bulletin available.

No. 164 — Use Coupon on Page 310

Pneumatic Thread-Gaging Tool Speeds Inspections

Keller Tool Co., Grand Haven, Mich., has a new air-powered tool that speeds inspection of threads in tapped holes. It is used in conjunction with standard taper-lock plug gages. Operation is simple: press and the motor spins, screwing a "go" gage into the hole; pull, and it reverses, backing the gage out. Weighing only 34 oz., it can be easily moved to the work, or suspended over the work area by a balancer. For inspecting small parts, the tool may be bench-mounted either vertically or horizontally. Called the 13D-2, it is regularly furnished with an adapter to accommodate taper-lock gages with thread diameters from .510" to .825". Other adapters available.

No. 165 — Use Coupon on Page 310

(Please turn to page 324)



ROUND AND SHAPED TUBING

.010" to 3/4" O.D. Max.
Certain Analyses .035"
max. wall to 1 1/2" O.D.
Available in:

Carbon Steels:

A.I.S.I.—C-1008, MT-1010,
MT-1015, C-1118, MT-1020,
C-1025, C-1035, E-1095

Alloy Steels:

A.I.S.I.—4130, 4132, 4140,
4150, 8630, E-52100

Stainless Steels:

A.I.S.I.—303, 304, 305,
309, 310, 316, 317, 321,
347, 403, 410, 420, 430,
446, T-5

Nickel Alloys:

Nickel, "D Nickel",
"L Nickel", "Monel",
"K Monel", "Inconel",
30% Cupro Nickel,
18% Nickel Silver.

Beryllium Copper.
"Reg. U.S. Trademark
International Nickel Company"

Chapter 4

Putting the Squeeze on Tubing —to End Bends!

Whether you use fine small tubing as a medium for transporting fluids or gases—or fabricate it into component parts—you want it straight as an arrow to start. That's where the machine pictured above comes in.

Commercial straightness is easily attained with Superior's numerous types of specialized straightening equipment.

In the normal course of tube drawing operations, unequal stresses are set up and the resultant tube has bends and bows which must be removed.

All these stresses are equalized in one operation. The tube is straightened and the end result is a better product for you.

To produce the world's best tubing we inspect and check many times, mechanically and metallurgically. We use microscopes to check grain structure, and keen-eyed inspectors to detect surface scratches, splits and pits. Pressure tests find any possible flaws in the walls. A continuing program keeps every Superior production worker aware of his part in the quality picture.

What does this mean to you?

It means you get fine small tubing that will do the toughest jobs better. Right now (because of Defense Orders and metal shortages) we may not be able to fill all of your tubing requirements, but it will pay you to check with your Superior distributor—he may have enough tubing in stock to help you. Always specify Superior Tubing and you'll always be right.

Superior Tube Company, 2034 Germantown Ave.,
Norristown, Pa.
West Coast: Pacific Tube Company, 5710 Smithway St.,
Los Angeles 22, Calif. UNDERbill 0-1331.

Superior

THE BIG NAME IN SMALL TUBING

All analyses .010" to 3/4" O.D.
Certain analyses (.035" max. wall)
Up to 1 1/2" O.D.



From midget type 1/4" models to heavy production 1 1/4" machines, there's always the one best drill for the job—a THOR . . . all handle styles, all popular speeds—every tool packing Thor's extra power . . . featuring the light weight and handling ease of Thor's modern design . . . available with stands and accessories. Call your Thor distributor for a free demonstration—or write for Catalog E-2. Independent Pneumatic Tool Co., Aurora, Ill.



Belt Sanders

Bench Grinders

Drills

Drill Stands

Fender Hammers

Grinders

Electric Hammers

Impact Wrenches

Nibbler

Nut Setters

Polishers

Sanders

Saws

Screw Drivers

Tappers

Valve Refacers

Valve Reseaters

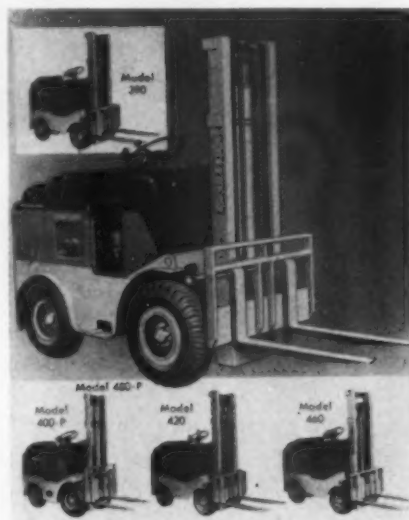
Air Tool Kits

Steam-Jet Cleaner With Powerful Action

Livingstone Engineering Company's latest steam-jet cleaner, Model JC-25, will operate at pressures up to 200 psi without adding appreciably to electric power requirements. Heretofore, steam-jet cleaning of machine tools, windows, equipment, etc. was effective at steam pressures in the range 125-145 psi. The new high pressure combined with Livingstone's Speedy-electric twin-jet steam lance, with finger-tip control, is said to give super-jet velocity and powerful cleaning action. Only 16" wide and 48" long, the unit has maximum portability in close quarters. It is completely self-contained. The company is at 100 Grove St., Worcester, Mass.

No. 166 — Use Coupon on Page 310

TOWMOTOR ANNOUNCES FIVE NEW MODELS



Towmotor Corporation, Cleveland, Ohio, recently announced the addition of 5 new models to the Towmotor line. Three of the new models, replacing 3 models formerly produced, have solid or cushion tires and a shorter wheelbase for greater maneuverability. The two other new models feature pneumatic tires on all wheels to bring to three the number of Towmotor models so equipped.

The five new Towmotors shown above are: 1, Model 480-P with 48-in. wheelbase, and a capacity of 4,000-lbs. at 24-in. load center. Big, pneumatic tires assure rapid movement of loads over rough surfaces, indoors and out. 2, Model 390 has a 39-in. wheelbase, and a capacity of 3,000 lbs. at 15-in. load center. 3, Model 400-P has a 40-in. wheelbase, and a capacity of 2,000-lbs. at 24-in. load center. Like the 480-P, the 400-P is equipped with pneumatic tires for safe, trouble-free operation over rough

(Please turn to page 326)

Why

UNBRAKO

"STANDARDS"

"Standards" keep you in the BLACK



Standard design and purchase



Standard tools

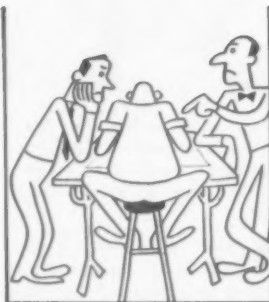


Standard (fast) production with "standards" from stock



Standard (or higher) profits

"Specials" put you in the RED



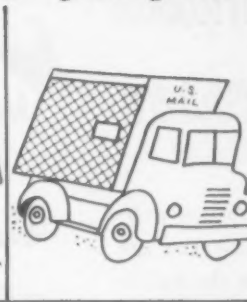
Special design



Special drawings



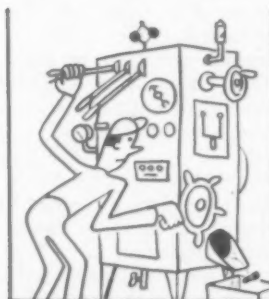
Special purchase



Special (delayed) delivery



Special stock



Special tools



Special production



Special bookkeeping



Special costs (higher)



Special profits (lower)



Knurled Socket Head Cap Screw



Flat Head Socket Cap Screw



Self-Locking Knurled Point Socket Set Screw



Knurled Socket Head Shoulder Screw



Fully-Formed Pressure Plug



Precision-Ground Dowel Pin

STANDARD recommends "Standards"

SPS

STANDARD PRESSED STEEL CO.

JENKINTOWN 31, PENNSYLVANIA



1336-A Series.
Equipped with Roller Bearing
Vulcanized-On Rubber Tread
Wheels.

✓ practical Design
✓ sound Construction
✓ proved Performance

DESIGN—CONSTRUCTION—PER-
FORMANCE... these are the
watchdogs that govern the build-
ing of every Bond 36-A Caster,
watchdogs that give you the
assurance of satisfaction when you
choose Bonds for your job.

Bond 36-A Series Casters are
among the most popular swivel
casters used throughout industry.
Fork, base and king bolt con-
struction distributes the load
evenly. The double ball race is
pressure lubricated for easy
swiveling.

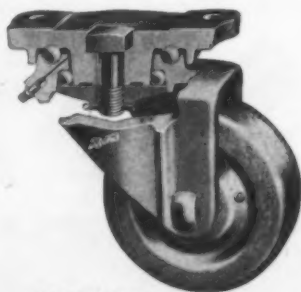
We will be glad to send you a
copy of the Bond Catalog K-38
which includes information on not
only the 36-A Series but on all
Bond Casters... write today.

BOND FOUNDRY & MACHINE CO.
Manheim, Pennsylvania

Bond
built-for-the-job
**36-A SERIES
CASTERS**



1336-A Series.
Equipped with Roller Bearing Semi-
Steel Wheels.



C-136-A Series.
Equipped with Roller Bearing Celoron
Wheels.

(Continued from page 324)

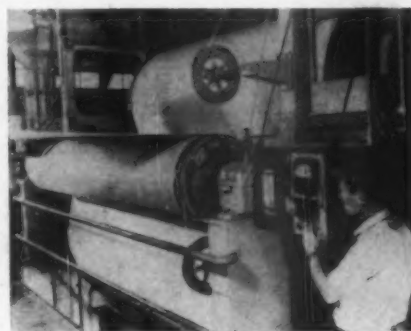
terrain. 4, Model 420 has a 42-in. wheel-
base, and a capacity of 4,000-lbs. at 15-
in. load center. 5, Model 460 has a 46-
in. wheelbase, and 4,000-lb. capacity at
24-in. load center.

Complete information on these 5 new
Towmotor Fork Lift Trucks is available
on request to Towmotor Corporation,
1226 E. 152nd St., Cleveland 10, Ohio.

1 1 1

BETA-RAY GAGE HELPS UNIFORM WEIGHT OF PAPERBOARD

In the first installation of its kind, a
General Electric beta-ray gage is being
used at the Antioch, Calif., plant of the
Fibreboard Products Corporation to help
maintain accurate and uniform weight of
milk carton paperboard.



Upon reading a deviation on the
gage's indicator, the operator adjusts
the 136-inch paper machine to main-
tain uniform board weight.

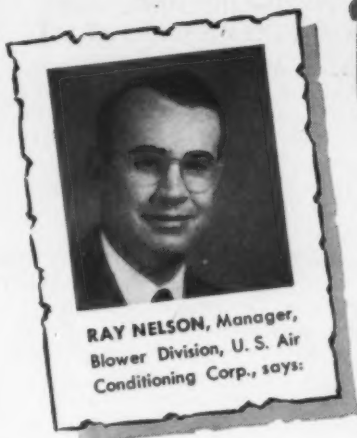
The gage, mounted on one of the com-
pany's 136-inch paperboard machines, re-
cords the varying amounts of beta-rays
absorbed by the board as it passes through
the gage head of the non-contacting de-
vice. The amount of beta-rays absorbed
varies with the weight of the board, thus
allowing a constant check to be main-
tained. Variations as slight as one per
cent from the desired weight per unit area
of the board are automatically indicated
and recorded.

Operators are able to make adjustments
of the processing machinery as needed to
produce paperboard of uniform weight.
This is particularly important in the case
of milk carton board and similar material
that is run through folding machines
which operate on extremely close toler-
ances.

According to E. H. Entricken, in
charge of instruments at the Fibreboard
plant, the G-E beta-ray gage is "more
than a watchdog to prevent bad runs—
it also aids in setting up new runs more
quickly."

The gage, which is not affected by the
speed, consistency, or temperature of the
material being measured, may also be
applied to plastics, rubber, metals, and
special sheet materials where a continu-
ous indication is desired. Since no part of
the gage is in actual contact with the ma-
terial being measured it leaves no mark
or scratch.

(Please turn to page 328)



Durkee-Atwood V-Belts solved our Vibration problem

"In designing our Type CH Ventilating Sets, we found heavy vibration in test models . . . and traced the trouble to the short-center V-drive. When we called in Durkee-Atwood engineers, they showed us that the vibration was caused by the multiple belts. Durkee-Atwood solved this problem by vibration-

testing their standard belts on their special equipment to meet our requirements. These belts, perfectly matched and with uniform cross sections, completely eliminated vibration. They run so true that *we have not had a single complaint from the field on the performance of this ventilating set.*"

ATTENTION PURCHASING AGENTS

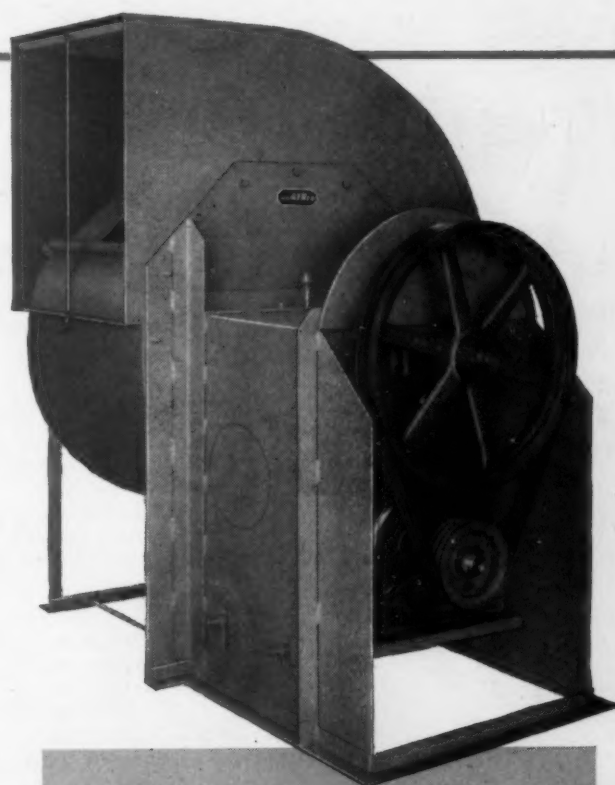
Vibration from mis-matched V-belts isn't confined to ventilating sets alone! It can make trouble in *all* your V-drive plant equipment . . . cause lower production, more maintenance time, increased belt replacement costs. So give Durkee-Atwood a chance to help!

Durkee-Atwood is a medium-sized company, so we can give exacting attention to every belt order. With our special testing equipment, we assure absolute matching of multiple belts . . . make sure that cross sections are perfectly uniform. This means *vibration-free* transmission for you . . . increased production and longer lasting service for your plant machinery.

Our moderate size permits fluid production, too—special work and emergency orders. Yet D-A's six modern plants and up-to-date equipment can handle your biggest orders.

If your plant has a defense contract, then you'll like Durkee-Atwood service . . . whether a simple belt replacement or help in designing a new drive set-up. Every D-A distributor is hand-picked to deliver the right-sized belts—*when you want them*—from the complete stocks of a full line. Or if you have a special design or production problem, experienced D-A engineers will help you work it out.

In our 30 years in business, we have established a record for quality V-belts. That is why we can guarantee the life of every Durkee-Atwood V-Belt! Write for complete details—or ask your nearest Durkee-Atwood distributor.



usAirco Type CH Housed Ventilating Sets. For efficient, low-cost ventilation application . . . for factories, laboratories, hotels, restaurants, hospitals. Compact, weather-proof design for inside or outdoor application. Capacities from 500 cfm to 18,000 cfm.

V-DRIVE ENGINEERING
DATA—
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DURKEE ATWOOD V-BELTS



Form No. 522

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Dept. P-10 • Minneapolis 13, Minnesota

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FOR HIGHEST QUALITY

Metal Name Plates

Skilled craftsmanship, long experience and the finest equipment, combine here to produce basic value—*quality name plates at the right price*. For lasting identification, clearness and permanent readability in name plates and instruction plates depend on the



Ask Us to Quote

Send a rough sketch, blueprint or sample, with specifications, for quotation—or write us fully about your requirements in name plates, instruction plates, dials, panels, scales, etc. Here standout identification and enduringly fine appearance costs no more!

ALUMINUM ANODIZING

We are equipped to apply this protective coating to aluminum parts and products by the exclusive Alumilite process—in a wide range of attractive colors. Your request for quotation is solicited.

CHICAGO THRIFT-ETCHING CORPORATION

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Metal Name Plates, Dials and Panels, Etched or Lithographed • Etched Metal Scales, Clock Dials, Trophy Plates, Plaques, Advertising Specialties • Etched Metal Panels for elevator and architectural uses • Coin Banks • Lithographed or Screened Plastic Name Plates or Dials • Aluminum Anodizing by the Alumilite Process.

SUBSIDIARY OF DODGE MANUFACTURING CORPORATION, MISHAWAKA, INDIANA

PNEUMATIC TUBES SPEED LABORATORY ANALYSIS AT SCOVILL

The Scovill Manufacturing Company, Waterbury, Connecticut, by installing a 1000-foot-long pneumatic tube system between the casting shop and metals research department, speeds laboratory analysis of each heat and eliminates the need for human messengers between the two operations.

Samples of each heat are sent from the casting shop to the metals research department for analysis, and a report of the analysis is returned to the casting shop. Only when the analysis report is received—and meets specifications—is the billet or bar released to the mill. Approximately 2400 chemical or spectrographic determinations are made per day.



Placing samples in envelope for tube dispatch to laboratory

Formerly, a messenger was needed on each shift to carry samples and messages back and forth each hour. Now, samples are merely placed in an envelope (see illustration), the envelope placed in a carrier, and the carrier inserted in the dispatch tube. The carrier travels at a speed of 25 ft. per second and is delivered into a receiving chute at the laboratory from which it is picked up and emptied. Reports are similarly sent back by a return tube. From 100 to 200 tube trips are made per day and samples or messages can be dispatched at any time without waiting for messenger service.

The new system, designed and installed by the Lamson Corporation, Syracuse, N. Y., is of particular importance in continuous casting operations. Rapid analysis and receipt of the analysis reports are necessary in these operations to maintain the correct composition of the alloy and to enable any necessary corrective measures to be taken to insure the casting of quality metal. Samples are taken every half hour at the continuous casting machines and sent at once for analysis.

Three-horsepower compressors furnish the vacuum which draws the carriers through the tubes. Each of the two tubes is equipped with two compressors—one in operation, one as standby. Standby and operating compressors are alternated to keep each in operating condition. The system is expected to pay for itself in less than a year.

TIME IS OF THE ESSENCE

... in producing essential products

Here are three Wolverine developments in tubular forms which, introduced as components of your products, can contribute immeasurably in saving time and critical materials, first in installation, and then in the subsequent operation and maintenance of such products.

1

WOLVERINE TRUFIN*—used for heat transfer work, is outstanding in time-saving qualities. Since the fins are integral with the tube itself, they will withstand vibration and the tube will remain in service an exceptionally long time. This obviously reflects in fewer and less frequent tube installations. With Trufin providing an increased ratio of outside to inside surface, the performance over plain surface tube, in many cases, will be more than doubled. The saving of time, and space too, is obvious.

2

SPUN END PROCESS†—is proving a great time-saver. Its use has enabled many manufacturers—often through a simple change in the design of tubular parts (components of their products)—to completely eliminate separate end closures or other assemblies and also reduce the time and cost of assembly operations.

† Re Issue 22465

3

CAPILATOR*—the Wolverine capillary tube used for restriction purposes—is unique in its field. Its bore is plug drawn, assuring a perfectly smooth inside surface that allows a uniform, uninterrupted flow through the tube.

* Reg. U.S. Pat. Off.

WOLVERINE TUBE DIVISION

Calumet & Hecla Consolidated Copper Company
INCORPORATED

Manufacturers of seamless, non-ferrous tubing

1463 CENTRAL AVENUE • DETROIT 9, MICHIGAN

Wolverine Trufin and the Wolverine Spun End Process available in
Canada through The Unifin Tube Co., London, Ontario

PLANTS IN DETROIT, MICH., AND DECATUR, ALA. • SALES OFFICES IN PRINCIPAL CITIES

Export Department, 13 E. 40th St., New York 16, N. Y.



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Here's what "Air Procurement" means: You simply 'phone your purchase order number and vendor's shipping commitment to your local Emery Air Freight office. *Instantly*, the entire Emery Network goes into action.

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Other Emery Expeditors make personal transfers en route wherever necessary . . . keep you posted with progress reports . . . check the shipment off the 'plane at destination . . . rush it directly to you *at any hour of the day or night!*

The result: A coordinated extension of your own Procurement and Traffic staffs reaching out into every town and hamlet in the nation!

And you get all this for the cost of the transportation alone!

Let Emery Air Procurement Service free you from needless detail, worry, uncertainty! . . . rely on Emery's nationwide network of offices and agents *as an extension of your own Expediting Staff*. Call your local Emery office *today* for details of this unique new service of "The World's Fastest Transportation System."

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Agents in all other major cities and towns in the U. S. A.

APPLICATION OF HYDRAULIC DUPLICATOR TO SHAPER CUTS COSTS

The application of a hydraulic duplicator to a Cincinnati 24" Shaper at a prominent Michigan crane manufacturer has resulted in a big cost reduction in the production of brake mechanisms for overhead cranes. Previously, the parts were produced by shaping and then lapping the surface to a required 50% bearing in a tedious costly operation. By equipping a new Cincinnati 24" Shaper with a Turchan Hydraulic Duplicator and a special rotary table as illustrated in the photo below, interchangeable mating sections were made in a single operation in a fraction of the time previously required.



The follower equipment consists of a motor and pump, shown on the left of the shaper, a stylus operated hydraulic valve, template, and a hydraulic cylinder attached to the elevating screw. The table feed is automatic and is either horizontal or circular as illustrated. The template operates the stylus and control valve, which in turn causes the table to move up or down as required. Depth of cut is controlled by the tool slide feed screw.

Hydraulic duplicators have proven very adaptable to shapers and present some interesting possibilities. They have proved most useful in those duplicating jobs where a relatively low quantity of parts are required and where the use of form cutters would raise the cost prohibitively. By using the follower in connection with a low cost sheet metal template, very intricate forms can be produced in a short period of time and with inexpensive single point tools.

Detailed information is available from the Cincinnati Shaper Company, Cincinnati 25, Ohio.

"ORLON" SAVES DOLLARS FROM SMOKESTACK WASTES

The smoke may go out the chimney, but there's a difference in dollars saved to many manufacturers operating modern plants where smokestack wastes are filtered through soot-collecting bags made of the Du Pont Company's new "Orlon" acrylic fiber.

Communities profit, too, where filtration bags are used to put an end to the air-contamination nuisance. But for the manufacturer, soot frequently is pay dirt. He is vastly interested in trapping the

(Please turn to page 332)



Mastering motor-made hurricanes

Did you ever stop to think that when you drive 60 miles per hour in a rain storm, the rain is hitting your windshield with almost hurricane force? Mastering these motor-made hurricanes is another specialty of 3M adhesives and sealers.

Sealing an automotive windshield requires outstanding performance from any sealer. It must bond the glass securely to rubber. The sealer must stand up under hot summer sun and zero winter cold. It must be impervious to moisture, and neither swell nor shrink under all driving conditions. By performing this exacting job on your car, a 3M sealer assures you of driving comfort the year around.

Making top-quality adhesives, coatings and sealers that successfully meet such tough requirements is 3M's specialty in the adhesives field!

See what adhesives can do for you . . .

Many manufacturers have found that adhesives aid in product improvement. Contact your 3M field engineer. He will be glad to examine with you the possibilities of adhesives in your business. Or, write directly to 3M, Dept. 710, in Detroit.



ADHESIVES • COATINGS • SEALERS

ADHESIVES AND COATINGS DIVISION • MINNESOTA MINING AND MANUFACTURING COMPANY

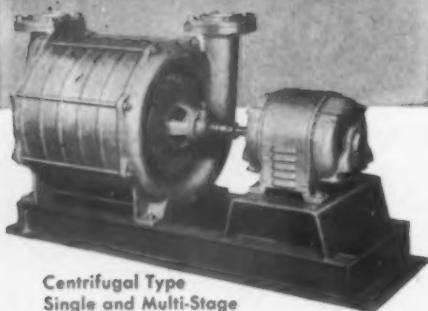
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Move AIR or GAS with Billmyre BLOWERS & EXHAUSTERS



Centrifugal Type
Single and Multi-Stage
1/2 lb. to 7 lbs. pressure
1/2 h.p. to 500 h.p.

Inherently self-governing—constant pressure maintained through entire capacity range. No controls or regulating devices needed for power, pressure or relief.

No internal lubrication required—air is always delivered clean and dry.

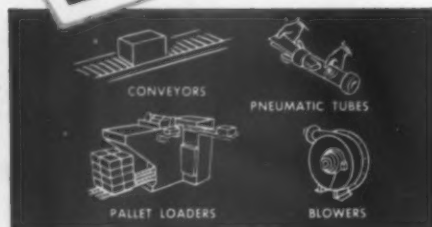
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Agitation and aeration, combustion, cooling and ventilation, gas and acid manufacturing, conveying and numerous other applications having various pressure or vacuum requirements.

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Our engineering staff is at your disposal. Call on us when you have an air or gas handling problem.

Bulletin B-5 gives descriptions, applications and specifications. Send for it. Write: Lamson Corporation, Blower Division, 415 Lamson Street, Syracuse, N. Y.



(Continued from page 330)

minutely fine particles of process products that escape in smoke.

Plant operators have experimented with collection bags for years, but until the development of Du Pont's tough "Orlon" with dimensional stability to heated gases and resistance to acids and acidic fumes, collection bags often failed with resultant loss of valued product and contamination of the atmosphere.

One firm ran its carbon black operation at a loss until experiments with "Orlon" solved the problem of reclaiming costly wastes from its smokestacks. The trouble started when production began on a new type of carbon black which the firm supplied for rubber, paint, varnish, inks, plastics, and, strangely enough, for making sugar whiter.

Advantages of "Orlon", reported by manufacturers who are increasingly turning to "Orlon", are its good-to-excellent resistance to mineral acids, fair resistance to weak alkalies, and the fact that it is not harmed by common solvents, oils, greases, neutral and most acid salts. Added to these properties are its dimensional stability to heated gases and its resistance to acids and acidic fumes at high temperatures. Manufacturers also point out that bags made from fabrics of "Orlon" acrylic fiber have to be changed less often than those of other materials. The longer life of "Orlon" results in economies because less operating time is lost for changes, and labor costs of making more frequent changes are saved.

Successful use of dust collectors made of "Orlon" is also reported by a large producer of metals. In this installation, "Orlon" is used in one of the firm's roasting processes. The wastes funneled through the bags of "Orlon" contain sulfur, zinc, lead, and cadmium. The presence of moisture often causes an acidic condition.

Here resistance of "Orlon" to chemicals proved valuable. This outstanding property of the new Du Pont synthetic fiber helped to keep the bags on the job and to reduce the cost per-bag-per-operating-day nearly in half. Now the company is converting its whole installation of 10,000 bags to fabrics made of "Orlon" acrylic fiber.

METALLIC ACETATE LOOKS LIKE METAL

Manufacturers who find it difficult to secure various metals for decorative purposes, may find metallic acetate, a product of Coating Products, Inc., 136 West 21st St., New York, N. Y., of more than passing interest.

This plastic material which looks like metal and possesses a mirror-like finish is the answer to replacement woes especially where metal was used for decorative purposes. One prominent radio set manufacturer has substituted a gold metallic acetate for metal on the grill. The acetate is laminated to board to look like the original metal part it replaced. Since the original part had no functional

(Please turn to page 334)

Over 85% of the torque wrenches used in industry are

STURTEVANT TORQUE WRENCHES

Read by Sight, Sound or Feel.

- Permanently Accurate
- Practically Indestructible
- Faster—Easier to use
- Automatic Release
- All Capacities

in inch ounces . . . inch pounds . . . foot pounds
(All Sizes from 0-6000 ft. lbs.)

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Every manufacturer, design and production man should have this valuable data. Sent upon request.

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SEASON QUALITY WRENCHES

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SHRED paper, textiles, rubber, cellophane, aluminum, tin foil and other materials.

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Shredding of confidential records important to plant security.

Shredding your paper and other materials provides more resilient high quality packing material — enables re-use of high cost materials for other purposes. SHREDMASTERS are selected and used by leading concerns and government agencies.



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STANDARDS and SPECIALS by the Millions

THE FERRY CAP & SET SCREW CO.
2165 SCRANTON ROAD • • • CLEVELAND 13, OHIO



"SHINYHEADS"

America's Best Looking Cap Screw

Made of high carbon steel — AISI C-1038 — to standards for Full Finished hexagon head cap screws — bright finish. Heads machined top and bottom. Hexagon faces clean cut, smooth and true, mirror finish. Tensile strength 95,000-110,000 p.s.i. Carried in stock.



"LO-CARBS"

Made of AISI C-1018 steel — bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size — not machined. Points machine turned. Tensile strength 75,000-95,000 p.s.i. Carried in stock.



FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.



"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.



CONNECTING ROD BOLTS

Made of alloy steel — heat treated — threads rolled or cut — finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.



FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert — steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.



"HI-CARBS"

Heat Treated Black Satin Finish

Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.



SET SCREWS

Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.



FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.



ADJUSTING SCREWS

Valve tappet adjusting screws — Hexagon head style — to blue print specifications — hexagon head hard; polished if specified — threads soft to close tolerance — points machine turned; flat and chamfered.



SPRING BOLTS

Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.



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should never have happened!

A pile of oily waste, rags or other flammable refuse is just a fire looking for a chance to happen... unless it's enclosed in a WITT Oily-Waste Can.

These Factory Mutual and Underwriters Laboratories approved Cans have all the strength, durability and economy of the famous WITT CANS plus tripod feet and hinged lid (hand or foot operated). Under normal usage WITT Oily-Waste Cans will last for years and years.

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WITT CANS
have the
"Right
Angle"

Made in 7 sizes,
with hand and foot-
operated covers, 5
to 30 1/2 gal. ca-
pacity.

3 sizes: 5, 6 3/4 and
8 1/4 gals. have Cor-
rugated bodies.

4 sizes: 12, 14 1/2,
22 and 30 1/2 gals.
have Plain bodies.

Witt Cans

THE WITT CORNICE COMPANY, Cincinnati 14, O.
"Originators of the Corrugated Can"

(Continued from page 332)

role other than decorative, the effect is the same with the exception that a critical material need not be used.

Another example is the ubiquitous juke box. Here is a classic instance of the use of metals for decorative purposes with mirror-like effects so common to this type of product. Coating Products reports that one of the largest manufacturers of juke boxes is now utilizing metallic acetates as an ideal substitute. The interior of the cabinet was formerly lined with a high finish metal. Today, the same result is achieved with an embossed silver metallic acetate. All around the record mechanism, a solid mirror-like interior reflects the same visual impression without the use of essential materials.

Still another usage of Coating Products metallic acetates is in the name plate and metal sign fields. Since the plastic can be laminated to heavy board, a quality of rigidity is obtained and another helpful substitution of critical materials is achieved. These signs can be silk screened or reproduced with other processes and are rapidly gaining favor in their own right as eye catchers.

Besides its virtue as a substitute for metals, metallic acetates have another advantage worth noting . . . their comparatively lower cost. Considerable savings are effected by the use of this material in contrast to chrome or finished metals.

1 1 1

VACUUM METALLIZING DEPOSITS THIN COATING ON MOST SOLIDS

Vacuum metallizing, a process for coating the surfaces of metals, plastics, paper, glass, and other materials with an adhering metallic film of extreme thinness, has been known for over a half century but it is only since the development of high speed vacuum pumps and efficient vacuum processing systems that vacuum coating with metals has become a successful industrial process.

Vacuum coating has already replaced many older methods of coating and has also made possible new products and new applications not readily made by other processes.

The working principles of vacuum metallizing are simple: the equipment consists of an airtight chamber in which a high vacuum can be created and held; an evaporation source or holder for the coating material; and jigs for holding the objects to be coated.

The coating material is placed in the source and heated to a temperature at which it evaporates in vacuum, producing vapor particles which travel in a straight line from the source until they strike the material to be coated. Objects can be coated on one side, rotated for coating on all sides, or continuous surfaces may be coated from a roll.

Almost any type of material can be coated. The only restriction is that it must have a vapor pressure low enough to permit reaching the operating pressure in

(Please turn to page 336)



or others belonging to your workers

HANDS are a very valuable part of your production line. Also the most vulnerable. Give them the added protection available today in . . .

Mione SPECIAL

Containing G-11* (Hexachlorophene)

The G-11 (Hexachlorophene) incorporated in MIONE SPECIAL, when used in normal washups, will greatly reduce the bacteria on the skin. This antiseptic-germicidal action . . .

Reduces the occurrence of dermatitis
Reduces the danger of skin infection
Reduces the hazard of communicable diseases
Prevents the spread of skin infection
Saves you man-hours and money by cutting down illness and absenteeism

An extra dividend of safety and health is incorporated in MIONE SPECIAL. It has all the dirt-chasing and grime-removing properties that you have always found in MIONE products, and its cost per scrub-up is comparable to any powdered hand soap marketed today.

You owe it to yourself, your employees and your company to investigate the advantages of using MIONE SPECIAL in your washrooms.

Write us for the name of the MIONE supplier in your area.

*Trade mark of Sindar Corporation



the
**SHORTEST
WAY**


See This New
Doehler-Jarvis
16mm Sound Motion
Picture on Die
Casting and Finishing

See it in your own
office or plant
with your Executives
...as guests of
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We'll send along
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BATAVIA, N. Y. • CHICAGO, ILL.*

(Continued from page 334)

the chamber. This requirement is met by all metals which can be coated in the form of pieces, filaments, rolls, sheets, etc. The coating materials are pure metals, some alloys and a number of metallic salts. The most frequently used metals are aluminum, gold, silver, chromium, zinc and nickel.

The F. J. Stokes Machine Company, 5500 Tabor Road, Philadelphia 20, Pa., makers of metallizing equipment, observes growing acceptance of the vacuum metallizing process because of its economy in achieving known results and the opportunities it affords for creating new products.

NEW METAL TREATING PROCESS SPEEDS COLD WORKING

A new metal treating chemical process which greatly extends lubrication limits in the cold working of steel, was recently announced by the Pennsylvania Salt Mfg. Co., Philadelphia, Pa. Designated as the Pennsalt Foscoat Process, it consists of compatible cleaning, pickling and application of a new phosphate coating and especially developed lubricants to steel. A heat-resistant lubricating surface is produced which is chemically interlocked with the steel and, therefore, possesses exceptional adherence even under the most severe working conditions. The new process is the result of joint research con-

ducted by Pennsalt and the Heintz Manufacturing Company of Philadelphia. Its efficiency has been demonstrated in cold extrusion, and the next step according to Heintz engineers awaits the general availability of press equipment of sufficient size and designed to take advantage of the raised lubrication limits.

But of more immediate importance are the results which have been attained in such applications as tube drawing, wire drawing, deep drawing (ironing), deep stamping, cold heading and similar cold working operations.

In these operations there generally exist two limitations—lubrication and the ductility of the metal. The former is virtually eliminated by the chemically bonded lubrication film given steel surfaces by the process.

Significant economies resulting from this improvement in lubrication include elimination of intermediate press operations, as well as annealing and chemical treating operations; additional reduced consumption of chemicals because of compatibility; increased production with existing equipment; savings in metal or reduction in scrap losses, and considerable extension in the life of dies.

In wet drawing of fine steel wire, commercial application of the process resulted in a 40% increase in rate of production, and die life was increased 2½ times. At the Heintz plant, its utilization brought about substantial economies in the fabrication of automatic washing machine tubs.

Reductions in scrap losses due to rejects and in down-time for stoning of dies have resulted in an increase of 140% in output.

It is stated that dramatic savings are in prospect in commercial cold extrusion, for the process can often eliminate the necessity for forging or upsetting of heated billets. Also savings are possible by adapting plain carbon steel for applications ordinarily requiring steels containing critical and expensive alloying materials.

QUALITY CONTROL CONVENTION TO BE HELD IN SYRACUSE

The sixth annual convention of the American Society for Quality Control, will be held in Syracuse, N. Y., May 22, 23 and 24, 1952. All meetings, exhibits and official meals will be in the newly constructed Onondaga County War Memorial, convention headquarters. Technical sessions, as many as eight running concurrently, will provide specialized quality control information, and a condensed training course in basic quality control techniques will provide basic know-how for new members and a refresher course for old-time control men.

The 1952 convention is under the general chairmanship of Leon Bass, General Electric Co., Electronics Park, Syracuse. (Please turn to page 338)



WRITE FOR INDUSTRIAL CATALOG

INDUSTRIAL RUBBER PRODUCTS

Solid, hard or sponge rubber parts molded to customers specifications from natural, synthetic and reclaimed rubber

Davidson RUBBER COMPANY

BRIGHTON STREET Department 4 BOSTON 29, MASS.

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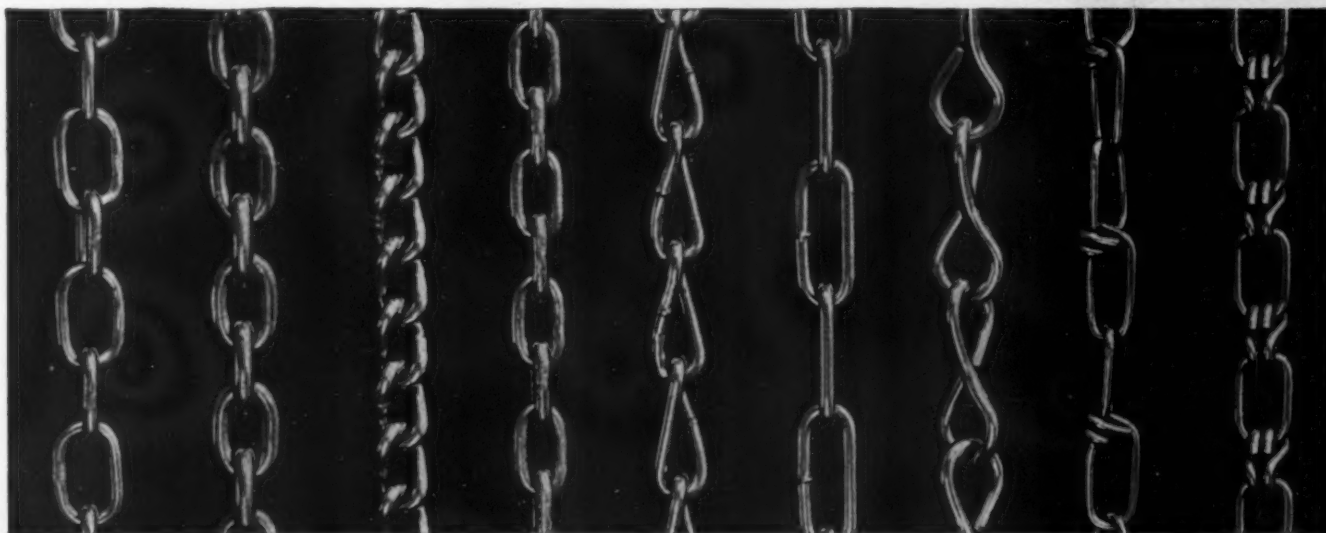
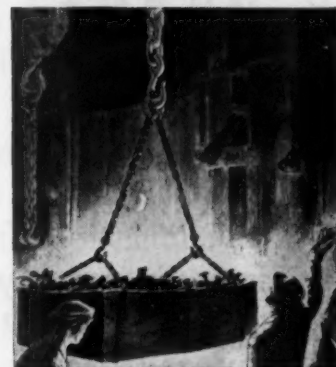
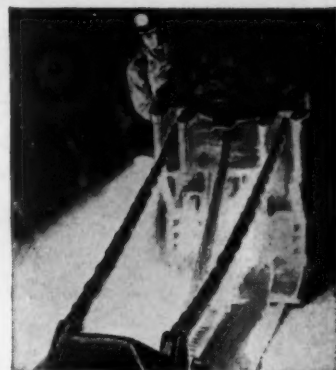
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Chances are, you use chain for more purposes than you realize.

Chain is an important part of many a product. What's more, there is hardly a job of holding, hauling, or hoisting that can't be done better and safer with chain.

Campbell makes chain for every purpose. And every link is inspected before it leaves the factory. Look to Campbell for the right chain for your needs.



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TO SAVE
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DARNELL CASTERS & WHEELS

Reduce floor and equipment wear to a minimum — increase employee efficiency with the casters that "always swivel and roll."

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DARNELL CORP. LTD.
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CRANE-HUNG SCALE CUTS WEIGHING TIME 75%

A 75% reduction in the time required to weigh 5-ton rod loads in process in the mill is claimed by The Riverside Metal Company, Riverside, N. J., a producer of non-ferrous sheets, strips, rods and wire. The company, which requires the weight information in computing payroll and production data, reports the saving as due to the installation of a 20,000 lb. capacity dial-reading scale, hung to the mill crane.

Built to Riverside's specifications by Hydroway Scales, Inc., of Detroit, the device is simply hooked below the lower block by the oval eye built into the scale body. Normally the unit remains slung in this position throughout a work shift, and tackle around the rod loads is made fast in the conventional manner to the hook extending below the scale.

Load weighing previously took five minutes and usually required the attention of three men, plus a foreman who recorded scale readings. Moreover, loads to be weighed had to be lifted clear of obstructions transported across the main



Crane operator takes readings from two-foot dial, graduated in units of 20 lbs., while rod loads are in transit.

bay to a floor scale, lowered onto a raised wood table (constructed on the scale to prevent long rods from touching the floor on either side), then weighed, and finally returned across the mill again to the next operation.

The crane-slung scale now permits one man, the crane operator, to observe and record all scale readings on loads while they are in transit, and cuts unproductive weighing-time to between a minute and a minute and a half per load.

When not in use for an extended period, as between shifts, the device is unhooked from the crane and placed conveniently to one side in its own specially designed cradle. The cradle, arc-welded throughout, is constructed of one-quarter and one-eighth inch steel plate and is mounted on castors for easier moving on the mill floor. It is so designed that when the scale is resting in it, the comparatively fragile dial face is tilted away from the cradle back piece, reducing the likelihood of scuffing or possible breaking of the glass.

Specialists at solving Special Problems



Like most producers of specialized steel products, Harrisburg is "loaded" with orders. But that doesn't change our policy of always doing our level best to solve problems for customers, old and new, to the best of our ability.

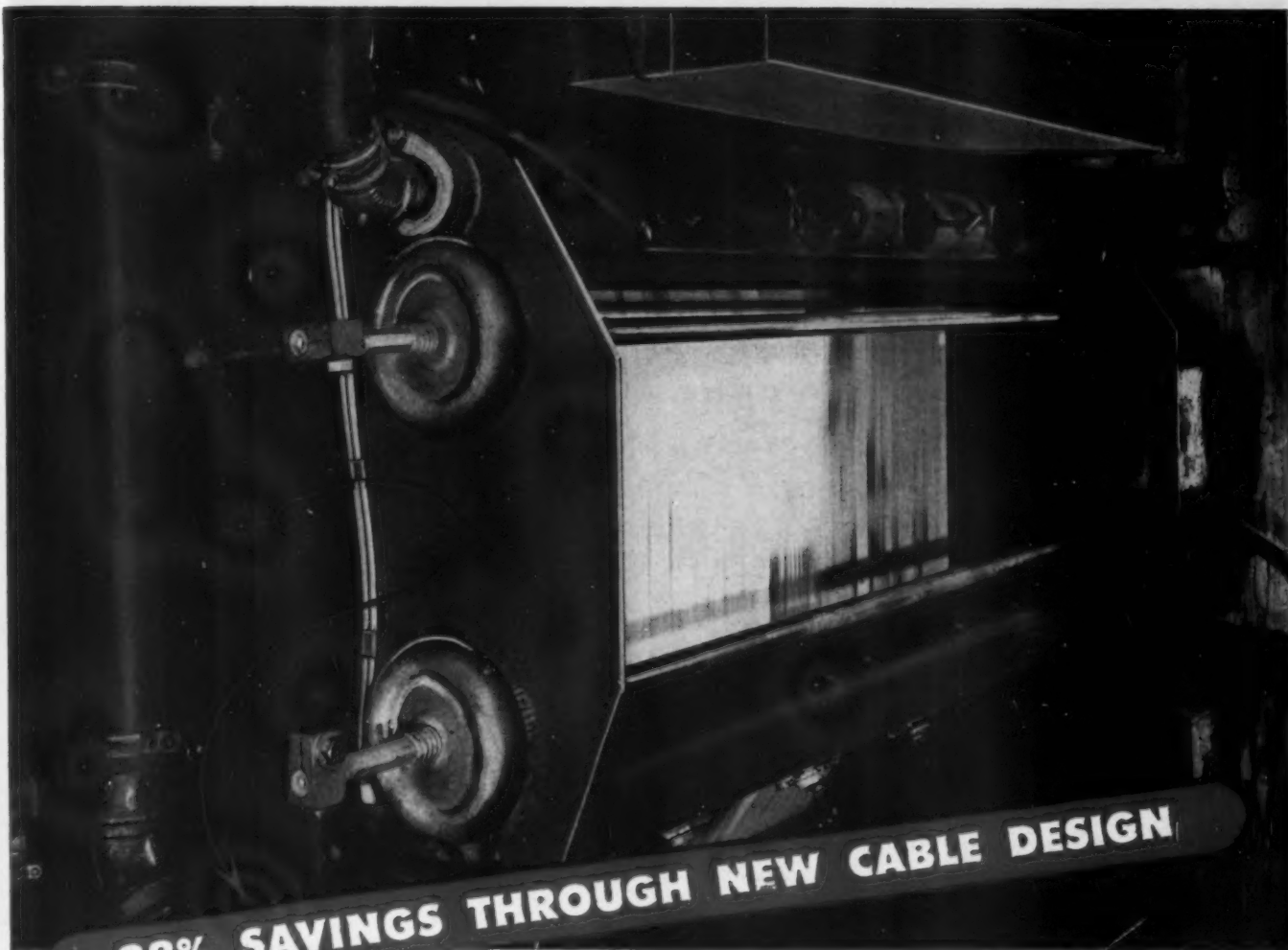
The products Harrisburg makes are listed in this ad. They serve in many industries throughout the world. When you need them, try us . . . and we'll try to help you, if we possibly can. If we can't, we'll tell you . . . promptly and courteously.

Harrisburg Products . . .

- ✓ Seamless Steel High-Pressure Gas Cylinders
- ✓ Lite-Weight Liquefied Petroleum Gas Cylinders
- ✓ Seamless Steel Pipe Couplings
- ✓ Drop Forged Steel Pipe Flanges
- ✓ Commercial Drop Forgings

Harrisburg
STEEL CORPORATION
Harrisburg 19, Penna.

98 YEARS IN PENNSYLVANIA'S CAPITAL
Custom-Built Quality Products in Quantity



88% SAVINGS THROUGH NEW CABLE DESIGN

How Okonite-engineered cables save money for the McCall Corporation

Engineers of the McCall Corporation, Dayton, Ohio, sought a means of reducing their insulated cable replacements on six printing presses. The ordinary cables used for supplying the gas ignition apparatus failed quickly because of temperatures ranging from 350 to 450°F. Monthly replacements of the standard rubber-insulated automotive ignition cable previously used gave rise to the following costs:

BEFORE

Cost of cable per year \$650.00
Labor in replacement 900.00
Yearly cost: materials and labor \$1550.00

In 1948, at the suggestion of an Okonite engineer, McCall installed Okonite's heat-resistant Okotherm cable. Since then, no replacements have been made under conditions of normal usage. Although the Okotherm cable was sev-

eral times as expensive, experience has already shown that annual costs have been reduced to a mere fraction of the previous cost, as follows:

NOW

Cost of cable per year \$142.00
Labor on installation 37.50
Total yearly cost using Okotherm \$179.50
...a saving of 88.5%



Stories like this are not unusual in the file of actual case histories at Okonite. For the broad research and design and manufacturing skills which have developed such long-lived, trouble-free cables for normal use, have also developed many types for highly specialized applications.

These facilities are available to *you*, to help solve any difficult cable problems arising in *your* operation. Don't hesitate to call in your nearest Okonite representative, or write The Okonite Company, Passaic, N. J.



OKONITE



THE BEST CABLE IS YOUR BEST POLICY.

insulated wires and cables

9106

UNSURPASSED QUALITY

IN WORK GLOVES FOR
OVER 30 YEARS

GOOD LUCK

WORK GLOVES

THE FASTEST SELLING COMPLETE
LINE IN AMERICA!



CERTIFIED QUALITY

The Good Luck Quality Guarantee
is your assurance of increased
sales and satisfied customers.

GOOD LUCK GLOVE CO.

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BROCHURE DESCRIBES VACUUM IMPREGNATION PROCESS

The F. J. Stokes Machine Company has published a comprehensive book on the subject of vacuum impregnation in which the process is explained, a detailed list of applications is given, and equipment used in vacuum impregnation is described and pictured.

Vacuum impregnation, which introduces an impregnating agent into a chamber where a high vacuum has been drawn, is a versatile process used in many fields. It permits treatment with impregnants of many materials which would be difficult or impossible to treat satisfactorily under atmospheric pressure. Not only is the vacuum-impregnated product improved as compared with similar products impregnated by ordinary dipping or soaking, but in many cases the saving in time is very important. Among its many applications are insulation of electrical equipment, including armatures, capacitors, coils, cables and transformers, filling of thermometers and small bottles, weatherproofing of papers and textiles, bleaching and dyeing of baseball bats, and inking of type-writer ribbons.

The new 32-page brochure on vacuum impregnation is available upon request to the F. J. Stokes Machine Company, 5500 Tabor Road, Philadelphia 20, Pa., leading manufacturer of high-vacuum pumps and vacuum processing equipment.

1 1 1

LOW-COST RESORCIN-PHENOL ADHESIVE DEVELOPED BY BORDEN

A new low-cost resorcin-phenol adhesive which meets military specification MIL-A-379A (formerly JAN-A-397), has been developed by the Borden Company's Chemical Division.

The new adhesive is called Casophen LT-68, and is an improved modification of Casophen LT-67. The latter was the first boil-proof glue developed for commercial use that could be cured at intermediate temperatures. It was brought out by Borden in 1942.

A big advantage of LT-68 over its predecessor is that it can be stored for a full year without sacrificing any of its working properties or the quality of the bond. LT-67 had a storage life of only six weeks.

Casophen LT-68 will enable manufacturers of defense materials to stretch hard-to-get resorcin supplies, since the glue contains less than 20 percent of this ingredient. For this reason, LT-68 costs less than any other resin-phenol glue that meets the above specification.

The bond is completely resistant to boiling and outdoor exposures. Although LT-68 was designed as a Type II adhesive (for intermediate temperature setting), it also meets the requirements for Type I (room temperature setting).

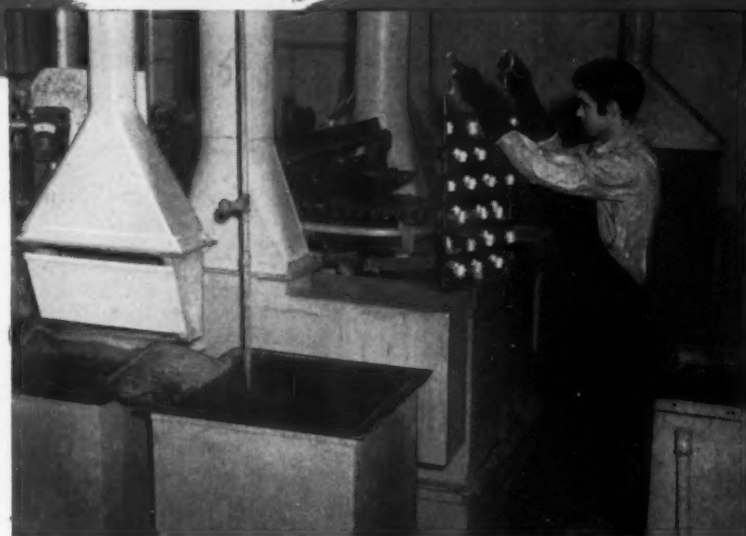
LT-68 is used, among other things, in laminated frames, keels and other ship parts, and for ribs for Arctic shelters, Army field furniture and skis.

(Please turn to page 342)

UDYLITE PRECISION PLATING

**KEEPS 'EM
FLYING**

**SCINTILLA MAGNETO DIVISION
OF BENDIX AVIATION CORPORATION
USES UDYLITE EQUIPMENT
AND PROCESSES TO SAFEGUARD
VITAL AIRCRAFT IGNITION PARTS**



Udylite plating installation at Scintilla Magneto Division of Bendix Aviation Corporation showing ignition connectors of the Lockheed F-90 Fighter being processed.

Spark of life to military aircraft—both jet and propeller driven—is the electrical system. Failure can be fatal, so the Scintilla Magneto Division gives the metal of ignition connectors a protective coating against rust and corrosion with Udylite plating equipment and processes.

Here you have an example of how Udylite is helping beat the ploughshares of peace into the swords of

war. In defense weapons, ranging from side arms to submarines, you'll find that Udylite precision-plating is making an important contribution to national defense.

If you have a defense job that involves metal finishing, your Udylite Technical Man can lend you the experience gained in World War II when Udylite developed new machines and methods for bettering the plating of the tools of war. Call him today and state your problems. Or write direct to *The Udylite Corporation, Detroit 11, Michigan.* There's no obligation.

**THE
Udylite**

CORPORATION
DETROIT 11, MICHIGAN

PIONEER OF A BETTER WAY IN PLATING



Important reasons why Pheoll SCREWS • BOLTS • NUTS Produce More Profit for You

MAINTAIN PEAK OUTPUT with Pheoll precision-made screws, bolts and nuts—they will speed your assembly work and improve product appearance.

INSURE PRODUCT PERFORMANCE with Pheoll quality screws, bolts and nuts—standardize on these dependable industrial fasteners.

HUGE MANUFACTURING FACILITIES assure rapid production of both standard and special fasteners.

SINGLE SOURCE OF SUPPLY for screws, bolts and nuts in different sizes, types and metals.

OVERNIGHT DELIVERY to principal cities from centrally-located Pheoll factory and warehouses.

FACTS ABOUT Pheoll YOU SHOULD KNOW

- One of the nation's leading producers of industrial fasteners.
- Pheoll products are widely used in part assembly when quality is of prime importance.
- Men who produce Pheoll industrial fasteners are highly trained and experienced craftsmen.
- All products are manufactured under rigid quality control standards.
- Constant product inspection from laboratory metal analysis, through production and final finish is your assurance of precision made, trouble-free screws, bolts and nuts.

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Pheoll MANUFACTURING COMPANY
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CHICAGO 30, ILLINOIS
SCREWS • BOLTS • NUTS
Industrial Fasteners and Machine Drives

GUIDE SHOWS CORRECT EXTINGUISHER USE ON VARIOUS TYPE FIRES



This new two-color, 12" x 22" poster, which quickly tells employees the correct fire extinguisher to use on rubbish, wood, inflammable liquid or electrical type fires, has just been released by Randolph Laboratories, Inc., Chicago, Illinois.

Ideal for posting in the plant at strategic locations, and for use in plant fire schools and employee lectures, the Randolph Extinguisher Guide illustrates all

standard type fire extinguishers, and graphically explains the proper use for a soda acid, pump tank, foam, carbon dioxide, carbon tetrachloride, and dry-powder extinguishers. The guide also indicates which extinguishers are subject to freezing, as a help in proper placement in heated and unheated areas.

For quantity copies, write to Randolph Laboratories, Inc., 8 E. Kinzie Street, Chicago, Illinois.

COPPER SHORTAGE GROWS

A shortage of copper scrap, supplies of which are drying up rapidly, has forced a virtual shutdown of the important ingot-making industry.

A partial solution to the copper scrap shortage, National Production Authority officials said, is in assuring strict compliance with the 30-day supply inventory limitation of Order M-16 for generators and the 60-day supply limitation for dealers.

NPA plans to conduct spot inspections of copper scrap inventories to assure compliance. Investigations will begin shortly.

NPA is also considering reducing the inventory levels of dealers from the present 60-day supply to a 30-day supply.

NPA officials also pointed out that many persons authorized to buy copper base alloy ingot have been purchasing copper scrap because the ingots were not available for purchase.

This has disrupted the normal distribution pattern, intensified the scrap shortage, and is a direct violation of NPA regulations.

About 40 percent of the Nation's normal supply of copper consists of copper and copper-base alloy scrap, NPA said.

Increased scrap supplies would increase copper production and substantially reduce the demand for new copper.

Scrap drives within the electric utilities industry are being urged by the Defense Electric Power Administration

to combat the critical shortage of metals.

The metals most sought are copper, steel, and aluminum scrap and their alloys, DEPA stated. The shortage of copper scrap is especially acute.

The utilities are requested to promote scrap drives in their respective organizations and arrange for the sale of the metals collected so that they will be promptly channeled to the primary production mills.

TAPER ROLLERS SOLVE CONVEYOR CURVE PROBLEMS

A new, 90 degree, power roller curve conveyor, which is said to overcome all past difficulties in conveying boxes, cartons and packages around curves, has just been perfected by The Alvey-Ferguson Company, Cincinnati 9, Ohio. The new A-F 90 degree live roller curve employs tapered rollers which provide efficient package control with no skewing or jamming action—and a simple V-belt drive which requires no oiling. Power driving the V-belt is provided from an individual motor or from an adjacent conveyor. The heavy duty V-belt, which provides friction drive to the lower side of the tapered rollers, rides in precision sheaves mounted to guide the V-Belt around the arc of the curve. The sheaves maintain pressure against the load rollers, assuring a positive drive. The curve is so constructed as to be easily combined with other A-F conveyor sections.

(Please turn to page 344)

Look Alike?

YES... but one is of superior
quality and costs less than
1/2 as much because of
Accurate
springmaking know-how!

Given a few machines and some wire, anyone can make springs . . . the difference comes in "know-how." And that's what we have to sell at Accurate.

A good example of how Accurate know-how can pay off is the history of the two springs illustrated above. One was made in two operations and required 100% inspection with rejects running as high as 50%. Accurate know-how developed the means of producing this spring *complete in one operation with such unvarying accuracy that inspection could be eliminated.* First cost is lower . . . overall cost is lower.

If you require precision springs in quantity, we would welcome the opportunity to go over your needs with you and make recommendations. Write today.

ACCURATE SPRING MFG. CO.

3825 West Lake Street
Chicago 24, Illinois



ASK FOR your complimentary copy of the Accurate Handbook of Technical Data on Springs. It's full of short cuts for making spring calculations.



SPRINGS • WIRE FORMS • STAMPINGS



no matter the shape or size . . . from drawer handles
to driving wheels . . . in plastics, from acetate
through neillite to zyx . . . by injection,
compression or transfer molding . . .

If your part comes from Watertown — It's got to be right

Our equipment is up to the minute . . .
Our laboratory is second to none . . .
Since 1915 precise perfection in plastic parts
has been our bread and butter . . . Why not benefit
from those long 35 years of knowing how?

Whether your job is simple
or complex . . . won't you
call on us?



WATERTOWN MANUFACTURING COMPANY
200 Echo Lake Road, Watertown, Connecticut.

PLASTIC SPINNING TUBE HAS LONGER LIFE

A new plastic spinning tube which it is claimed will wear three times longer than conventional types, has been developed for the textile industry by the mechanical goods division of the United States Rubber Co., Rockefeller Center, New York. The tube is made of a tough new rubber-plastic compound and will not shatter, chip or warp. It will hold up to 16 percent more yarn because yarn grips the spinning tube better thus making a tighter package. In addition, the tube needs no metal ferrules which makes possible a longer yarn package. The company states that approximately 20,000,000 spinning tubes are used by the textile industry, and replacement runs as high as 25 percent annually. Because of its toughness, the new tube will reduce the replacement rate sharply. The tube is marketed under the trade name Uscolite Tapered Warp Tube, and is available in standard sizes and in three colors—blue, grey and brown.

BOOKLET PRESENTS DATA ON THIN ELECTRICAL STEELS

New test data and information on thin electrical steels are presented in a booklet "Armco Thin Electrical Steels", published by Armco Steel Corporation, Middletown, Ohio. The data, heretofore unavailable, permit the selection on electrical steels for high frequency equipment without theoretical determinations, extrapolation of meager data, or the use of empirical formulae.

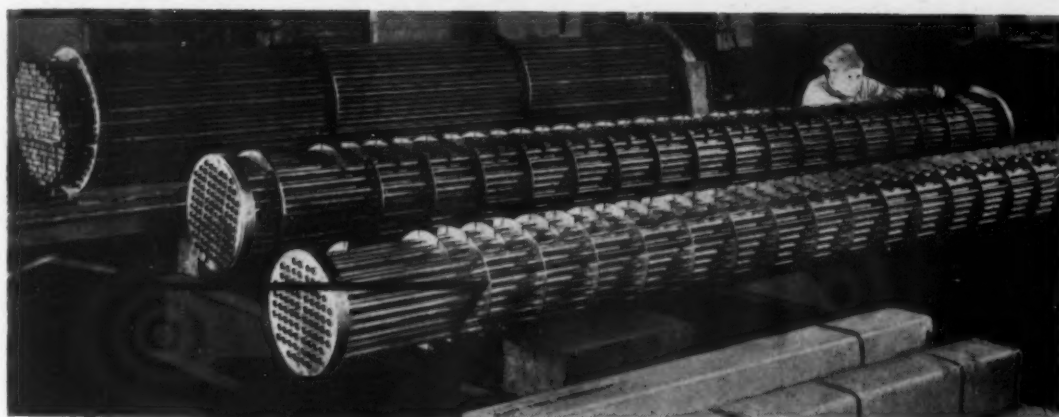
Representative test results are presented in 21 pages of curves giving the magnetic properties of three iron-silicon alloys, viz: Armco Tran-Cor T, a non-oriented grade; Tran-Cor T-O, an oriented alloy, and Tran-Cor T-O-S, a super oriented grade especially processed and test selected to meet high permeability requirements. The curves show core loss, exciting rms volt-amperes per pound, a-c permeability, induction versus frequency, figure of merit and lamination factor.

The booklet outlines how these thin electrical steels secure reduced core loss, smaller core dimensions, lighter cores and savings in copper when used in 400-cycle aircraft transformers and reactors, television transformers, magnetic amplifiers and special purpose chokes, transformers and reactors.

MANUAL ON STUD WELDING

Pocket-size Stud Welding Operating Manual, 32 pages, has been published by K S M Products, Inc., 6512 Park Ave., Merchantville, N. J. The manual features fourteen step-by-step photographs of the actual stud welding process. Equipment and accessories and their use are described along with directions for Hooking up the Equipment, and Approximate Generator and Timer Settings. There is also a list of the Do's and Don'ts of Stud Welding.

(Please turn to page 346)



A. O. SMITH
designs with
TRENTWELD

When A. O. Smith, big name in steam and heat transfer equipment recently designed and built a heat exchanger unit for Socony-Vacuum — TRENTWELD Stainless Steel tubing was used throughout. This heat exchanger unit for use in the petroleum industry is another example of how TRENTWELD is preferred by designers for products where stainless steel tubing fits the bill.

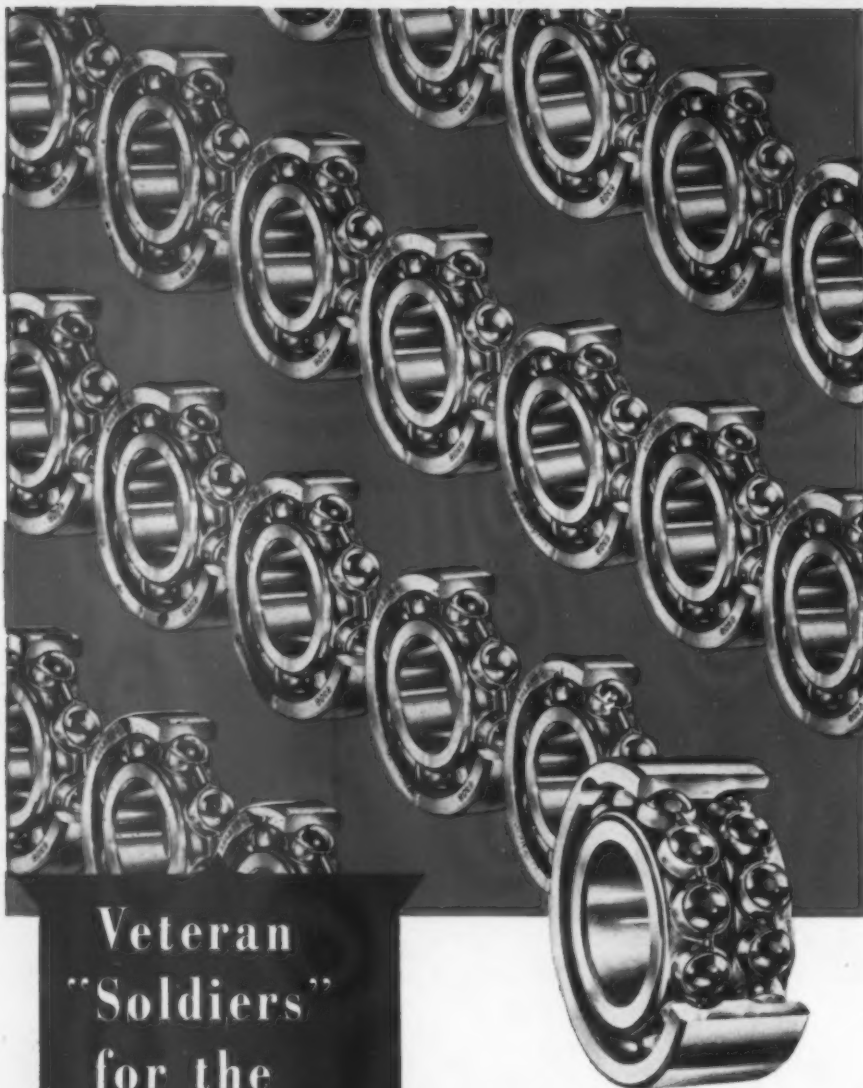
And here's why: TRENTWELD is the product of tube specialists. That means you're assured uniform quality and specifications of manufacture that meet your most exacting needs. Then too, TRENTWELD is available in a full range of sizes— $\frac{1}{8}$ " to 36" in diameter, in all grades and finishes. When the job requires stainless steel tubing, check with us.

TRENTWELD

STAINLESS STEEL TUBING

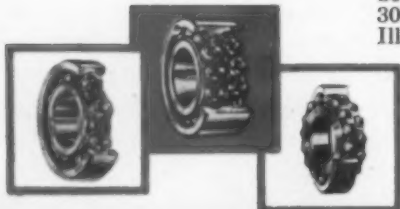
TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN

(Subsidiary of Crucible Steel Company of America)



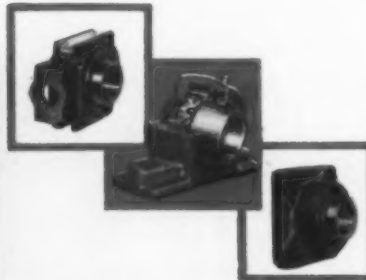
Veteran "Soldiers" for the Production Lines

Today, more than ever, products must be "best ever" in construction and dependability. So must the machines depended on for uninterrupted production schedules. In this preparedness race, veteran soldiers, like Ahlberg precision ball bearings, are being specified for defense products and production machine maintenance as never before. The reason has been simply test and comparison, in search for the best, by manufacturers from coast-to-coast. Better products plus reduced operating and maintenance costs of the machines you use can well be yours by using Ahlberg precision ball bearings. Ahlberg Bearing Company, 3025 West 47th Street, Chicago 32, Illinois.



AHLBERG

PRECISIONeeded Anti-Friction Products
Since 1908



INTERCHANGEABILITY STANDARDS FOR FLUORESCENT LAMPS

After five years of study and investigation, standards of interchangeability for 30 different types and sizes of fluorescent lamps have just been approved and published by the American Standards Association, 70 East 45 Street, New York 17, N.Y. These standards make it possible for consumers to specify a lamp of a given type with the assurance that lamps made by any of the various manufacturers will be mechanically and electrically interchangeable.

These standards fully describe each lamp under the headings—lamp designation, dimensional characteristics, operating characteristics, and starting requirements. The lamp dimensions listed are those necessary for drawing plans for the manufacture of lamp holders, lighting fixtures, and lighting installations.

The lamp types included are: pre-heat-start, instant-start, single-pin hot-cathode bactericidal and cold-cathode electric discharge lamps.

Copies of the above standards may be obtained from the American Standards Association, 70 East 45 Street, New York 17, N.Y. at 25 cents per copy.

♦ ♦ ♦

INDUSTRIAL PATENTS MADE AVAILABLE FOR FREE USE

Eleven patents have been made available for free use by the public through dedication by the Solar Aircraft Company, San Diego, Calif., the Patent Office of the U. S. Department of Commerce, announced recently.

Among the patents dedicated are:

A depth gauge for attachment to existing drill presses to limit penetration of a drill or counter sink into a work piece;

A machine for die-forming sheet material in which press and hammer action are combined in a single device so that a pressing action may be initially performed followed by hammering action to complete the operation;

A machine for bending thin-walled tubes in which a tube to be bent is forced into a suitably contoured passage in a die by the introduction of high pressure fluid within the tube, with or without the application of additional mechanical force against the rear end of the tube;

A bubble cap assembly for fractionating towers that may be economically formed from corrosion-resistant thin sheet metal;

A centrifugal casting machine for forming exhaust parts for aeroplane engines; and

An aircraft combustion heater with controls that eliminate the need for superchargers.

Lists of these patents with abstracts may be obtained upon request from the Register of Patents section, U. S. Patent Office, Washington 25, D. C.

Copies of patents may be obtained from U. S. Patent Office at 25 cents a copy.

(Please turn to page 348)



When It's
Grinding or Pulverizing

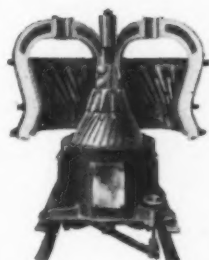
STURTEVANT
EQUIPMENT

*DOES THE
JOB FAST!*

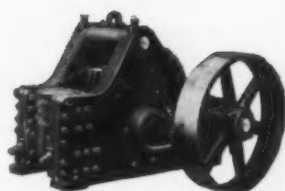
Whether you grind soft or hard materials, there is a Sturtevant Grinder or crusher exactly suited to your requirements.

Tough and rugged, Sturtevant Equipment has the built-in stamina to stand up under continuous operation. Most of this equipment has the "open door" accessibility which makes cleaning easy.

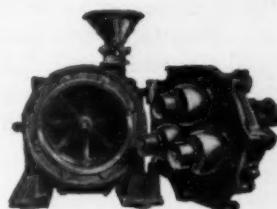
Look into Sturtevant Grinders and crushers for your applications. These machines will give you the exact mesh you want . . . cut your costs by increasing production. Write for catalog today.



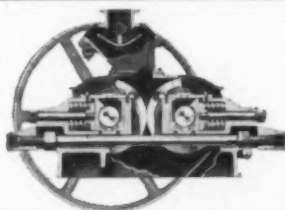
ROTARY FINE CRUSHERS for intermediate and fine reduction (down to $\frac{1}{4}$ "). Open door accessibility. Soft or moderately hard materials. Efficient granulators. Excellent preliminary Crushers preceding Pulverizers.



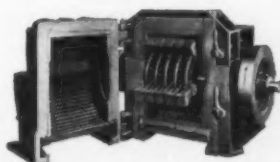
JAW CRUSHERS for coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.



RING-ROLL MILLS for medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operated in closed circuit with Screen or Air Separator. Open door accessibility. Many sizes. No scrapers, plows, pushers, or shields.



CRUSHING ROLLS for granulation, coarse or fine, hard or soft materials. Automatic adjustments. Crushing shocks balanced. For dry or wet reduction. Sizes 8 x 5 to 38 x 20. The standard for abrasives.



SWING-SLEDGE MILLS for coarse and medium reduction (down to 20 mesh). Open door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.



MOTO-VIBRO SCREENS screen anything screenable. Classified vibrations. Unit construction—any capacity. Open door accessibility. Open and closed models with or without feeders. Many types and sizes—range of work $\frac{1}{4}$ " to 60 mesh.

STURTEVANT MILL COMPANY

107 CLAYTON STREET, BOSTON 22, MASS.

DESIGNERS & MANUFACTURERS OF DENS AND EXCAVATORS • MIXERS • SCREENS • PULVERIZERS • ELEVATORS • AND COMPLETE FERTILIZER UNITS

**BACKED BY YEARS OF RESEARCH,
PRODUCTION AND PERFORMANCE...**

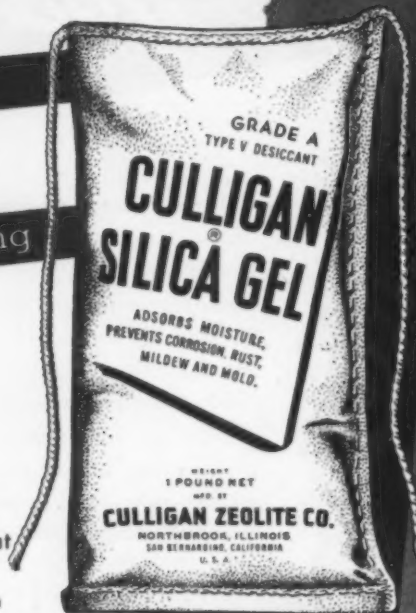
CULLIGAN® SILICA GEL

the ideal desiccant
for method II
dehydrated packaging

Millions of bags of Culligan Silica Gel have been delivered for a multitude of Method II packaging applications. Your assurance of Culligan service, quality and reliability is attested in the fact that over 2,000 leading organizations have consistently specified Culligan Silica Gel. Carloads of this Culligan grade A desiccant have been produced on prime contract directly with the Military Services.

- Culligan Silica Gel meets current military specifications. Prices are competitive.
- Available in all standard bag sizes, in bulk, or custom packaged to fit your immediate needs.
- National field-staff service of expert Culligan packaging engineers.
- Two convenient shipping points: Northbrook, Ill. (suburb of Chicago); San Bernardino, California.

write for price list
and specification sheet



description...

Culligan Silica Gel is a highly adsorptive granular form of pure silica, consisting of hard, glassy, rounded particles . . . ranging from 6 to 80 mesh in particle size. Interspersed with minute capillaries, it is estimated that one cubic inch of Silica Gel contains an acre of surface available for adsorption! Culligan Silica Gel will adsorb up to 40% of its own weight of moisture, and is non-dilutescent.

**CULLIGAN
DESICCANTS**

CULLIGAN ZEOLITE COMPANY

Home Office • NORTHBROOK, ILLINOIS

Copyright 1951 C. Z. Co.

NEW ENGLAND FIRM CUTS RECLAIM COST WITH G-E INDUCTION HEATER

Cost of reclaiming valuable metal strips from rejected weather stripping has been cut more than 90 per cent with a General Electric 5-kw induction heater at the Sponge Rubber Products Company of Shelton, Connecticut.

The company, which applies sponge rubber to metal strips to make weather stripping for automobile doors and trunks, found that, because of the difficulty of getting rubber to adhere to metal, 20 to 30 per cent rejects could be expected.



The induction heater conditions the rubber so that it can be pulled easily from the metal stripping.

Reclaiming the valuable metal strips from these unsatisfactory pieces was formerly done by soaking the strips in a chemical solvent. After several hours of soaking, the swollen rubber could be peeled off by hand. The solvent used however, was highly inflammable and gave off toxic fumes—both factors requiring constant safeguards. In addition, the cost of chemicals was approximately four to five thousand dollars a month.

In the new set-up, the rejected strips are placed on a continuous conveyor belt, pass through an inductor coil connected to a G-E induction heater, and are stripped immediately by a gloved workman. The heater runs six to seven hours a day, processing nearly six thousand strips in that time.

The new induction heating method is also inexpensive. According to the company, the cost for power is approximately 80 cents per eight-hour day, and the previous two-man process has been found to be a one-man electrical process. The induction heater, the company reports, paid for itself in the first month it was used.

1 1 1

REPORT ON MACHINABILITY OF HIGH TEMPERATURE ALLOYS

A newly-available preliminary report on the machinability of high-temperature alloys is featured in the current issue of the *Technical Reports Newsletter*, just released by the Office of Technical Services of the United States Department of Commerce.

(Please turn to page 350)

Take a tip from These Men of Decision...



"Something I always appreciate . . . and I imagine other Purchasing Agents do also . . . is the salesman who has taken the time and made the effort to have an understanding of just what our requirements and problems are in relation to his product. An interview based on this foundation saves time and gets results. Such an intelligent approach enables the P.A. to accomplish his job in a more effective manner," says W. N. Springer, Purchasing Agent, E. C. Atkins and Company, Indianapolis, Ind.



"Information on current trends and the status of industry is something that is always helpful to a Purchasing Agent like myself. The alert salesman is in close touch with conditions in his own industry, and has an opportunity to observe conditions and sense the current feeling in industry generally. I appreciate it when a salesman passes along any news concerning new business developments that will help improve my perspective on today's markets," says Herbert Layport, Manager of Purchases, Wyman-Gordon Company, Worcester, Mass.



"We welcome the visits of salesmen as an opportunity to convey to our suppliers the stability, integrity, requirements, and personality of our Company. We particularly welcome salesmen who are well advised in the manufacturing and engineering of their companies' products. Much of the Purchasing Department's contribution to increasing the company's profits comes about through such personal contact with the informed salesman," says G. R. Young, Director of Purchases, The Weatherhead Company, Cleveland, Ohio.

Which company gets the order?

38,500 readers of PURCHASING answer this question daily

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Unusually clean sockets in double-extrusion-produced Cleveland Socket Screws

You're sure of faster-working, extra clean sockets in Cleveland Socket Head Screws. Made by the Kaufman Double Extrusion Process in closely controlled progressive operations *in one machine*, (see above) sockets are perfectly concentric, true hex with sharp corners, and *clean*—all the way to the bottom. It pays you to specify and buy Cleveland Socket Head Screws.

THE CLEVELAND CAP SCREW COMPANY
2917 East 79th Street Cleveland 4, Ohio
Warehouses: Chicago, Philadelphia, New York, Providence

CLEVELAND *Top Quality* **FASTENERS**



(Continued from page 348)

The report covers one phase of a U. S. Air Force research program to determine requirements for the highest production at the lowest cost in the machining of metals, and presents unpublished data on the best way to machine high-temperature alloys, cast iron and steel in view of their microstructures.

Other items reviewed in the current *Newsletter* are reports on: the bacteriological retting of ramie fibers; direct current electric motors; dust control; seismic bar-magnet velocity meter; nickel-cadmium storage battery; manufacture of cooked potato products and self-luminous dials.

Single copies of the August, 1951 *Technical Reports Newsletter* are available without charge from the Office of Technical Services of the United States Department of Commerce, Washington 25, D. C. or from the United States Department of Commerce field offices.

1 1 1

MOLDS TWO LARGE CABINETS IN FIVE MINUTE CYCLE



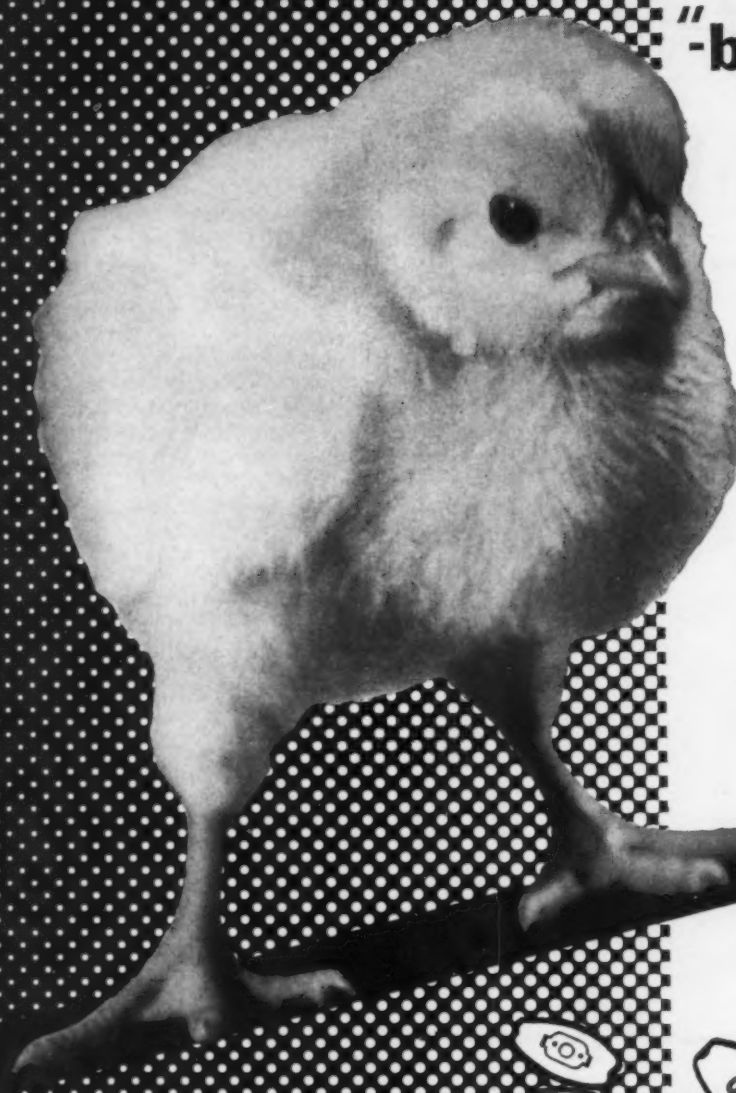
The accompanying picture shows an excellent example of large size plastic molding. In a five minute cycle this giant molding press molds two television cabinets. The size of these 40 lb. cabinets is 34" x 18½" x 18½" with ½" wall thickness. The press used is a 2500-ton unit made by the Hydraulic Press Manufacturing Company of Mount Gilead, Ohio. High production savings are reported in going from wood veneer cabinets to the plastic molded cabinets.

1 1 1

GEAR MANUFACTURING PROCESS CURBS DISTORTION FACTOR

The development of a new gear-manufacturing process employing carbonization, which limits distortion to one one-thousandth of an inch per foot of diameter, was recently announced by Gunnar E. Gunderson, president of the Brad Foote Gear Works, Inc., Chicago. Carbonization is a means of imparting hardness to gears through the application of heat.

(Please turn to page 352)



"-but my order is only chicken feed"....

Not to us! Small orders for springs, samples, or experimental lots are made in special departments equipped through experience for just such service. Go to one of the plants below, when you need springs, in any amount.



**WALLACE
BARNES
COMPANY**
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**THE WILLIAM
D. GIBSON
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COMPANY**
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PENNSYLVANIA

**BARNES-
GIBSON -
RAYMOND**
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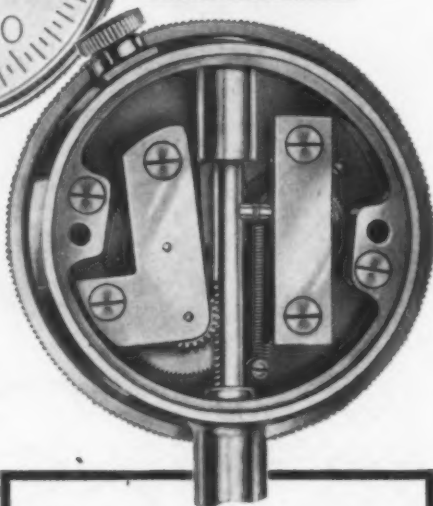
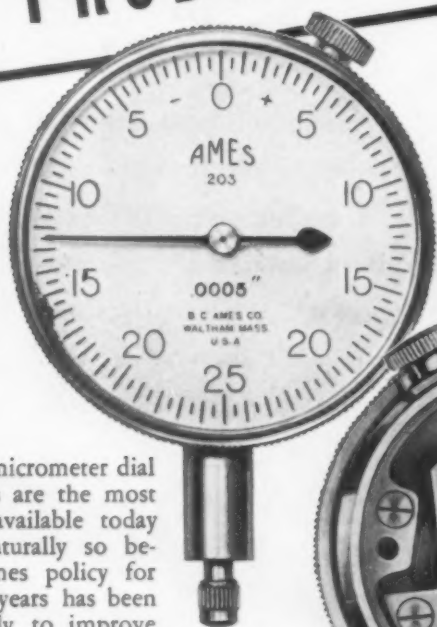
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**THE WALLACE
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COMPANY LTD.**
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CANADA

THE BEST ten SOURCES FOR MECHANICAL SPRINGS

10

Modern Design SPEEDS PRODUCTION

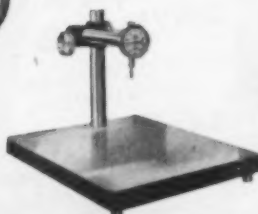


● Ames micrometer dial indicators are the most modern available today—and naturally so because Ames policy for over 50 years has been continually to improve design, to take advantage of new materials and to utilize the most advanced manufacturing methods. They are a real aid to the quality control engineer who is trying to keep pace with today's high production schedules.

Because Ames Indicators are functionally designed, they have fewer parts than ordinary indicators. Construction is simple with functional parts being larger and more rugged and adequately supported. Operational friction is at a minimum. Thus, Ames Indicators combine extreme sensitivity and accuracy with the ability and endurance to stay right on the job longer.

✓ Check this list of features . . .

- 1 Forged Solid Brass Case and Stem
- 2 Heavy Brass Plate
- 3 Coarse Pitch Stainless Steel Rack
- 4 Hardened and Burnished Steel Pivots
- 5 Dials Printed from Steel Engravings
- 6 Patented Bezel Assembly



Representatives in
principal cities.

B. C. AMES CO.

31 Ames Street
Waltham 54, Mass.

Mfr. of Micrometer Dial Gauges • Micrometer Dial Indicators

(Continued from page 350)

Although carbonization has long been recognized as a hardening method in the manufacture of gears, Mr. Gunderson explained, the new process is unique in that the heat treatment is controlled to an unprecedented extent. The accuracy of the heat regulation accounts for the fine tolerance achieved, he said. As an example, he pointed out with the new process there are now some twenty-inch gears in production which distort less than .0015 of an inch, while the distortion of identical gears manufactured by the old method varies from .015 to as much as .045 of an inch.

The company's refinement of carboration, he continued, hardens the meshing surfaces of the teeth in gears to a high degree while leaving the cores of the teeth soft but tough. The result is that a certain flexibility is realized, the advantage being that the impact on the teeth is reduced through absorption of some of the shock by the soft cores, he said. Accordingly, he declared, the specially treated gears are longer wearing while the efficiency of machinery containing them is substantially improved.

1 1 1

RECORD OUTPUT OF COKE IN 1951 PREDICTED BY DSFA

Secretary of the Interior Oscar L. Chapman recently declared that the production of coke by beehive and oven coke plants would reach an all-time peak of about 80 million tons this year.

Defense Solid Fuels Administrator Charles W. Connor said that the expansion of the Nation's coke capacity to meet defense needs was expected to increase coke output in 1951 by about 10 per cent over 1950 and about 7 per cent over the previous peak year output of 74,861,928 tons in 1948.

More than 450 new slot-type coke ovens have been brought into production in 1951 to date, adding almost 7,500 tons a day to coke capacity. Mr. Connor added, however, that the number of new ovens added in 1951 is not a net gain since a considerable number of old ovens have been taken out of production during the year because of obsolescence.

The production of oven coke in the first six months of 1951 totalled 35,493,179 tons, establishing a new record for a six month period. The previous record production of by-product oven coke for a six month period was established in the last half of 1948 when output reached 35,326,500 tons. In the 1948 calendar year the production of oven coke totalled 68,284,400 tons.

The output of beehive coke of 3,837,986 tons in the first half of the year was the highest since 1942, Mr. Connor said.

The increase in oven coke production is also aiding in the output of such by-products as benzol, which is vital in the manufacture of synthetic rubber, plastics and dyes, Mr. Connor said. Benzol output of coke ovens set an all-time record in the first six months of 1951 of close to 90 million gallons.

(Please turn to page 354)

Keep Your Scrap Moving

The obligation of steel manufacturers is to produce as much steel as possible within the limits of sound engineering and the over-all needs of economy. You can help meet this obligation. Scrap . . . will to the tune of millions of tons . . . will be needed to keep abreast of the present demand. Save your scrap and sell it as soon as possible to your local dealer.

Hot Rolled
Forged
Annealed
Heat Treated
Normalized
Straightened
Cold Drawn
Machine Turned
Centerless Ground



Symbol of Quality in ELECTRIC FURNACE STEELS . . .



**ARISTOLOY
STEELS**

**STANDARD STRUCTURAL ALLOY
BEARING QUALITY ALLOY TOOL
SPECIALTY NITRALLOY
CARBON TOOL
MAGNAFLUX-AIRCRAFT QUALITY**

COPPERWELD STEEL COMPANY
WARREN, OHIO

117 Liberty Street
New York, New York

1578 Union Commerce Bldg.
Cleveland, Ohio

528 Fisher Building
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176 W. Adams Street
Chicago, Illinois

7251 General Motors Bldg.
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Seattle, Washington

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Tulsa, Oklahoma

403 W. Eighth Street
Los Angeles 14, Calif.

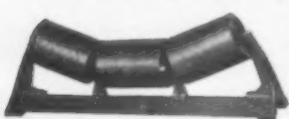
Monadnock Building
San Francisco 5, Calif.

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Partial List of WHAT WE MAKE

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We build a complete line but can show only a few units here. Look them over... likely you need one or more now. Whether complete systems, individual units or Replacement Parts... we will be glad to help you speed production—cut costs. May we hear from you?



Troughing and Return Idlers for belts from 14" to 60".



Scraper Flight Conveyors—also steel or wood Apron types.



Vertical and Inclined Bucket Elevators—spaced or continuous buckets.



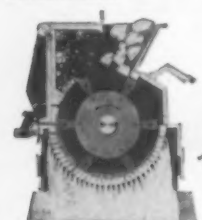
Spiral Conveyors, Flights, Troughs, End Bearings, etc.



A wide range of electric vibrating Feeders, Conveyors, Packers, Screens, Check Valves, etc.



Chains, Sprockets and Attachments.



Crushers, Pulverizers, Shredders and Grinders.



Electric Vibrating Barrel Packers and Packing Tables with decks to provide conveying action.

THE JEFFREY EST. 1877 MANUFACTURING CO.

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Birmingham 3	Detroit 13	Philadelphia 3
Boston 16	Forty Fort, Pa.	Pittsburgh 22
Buffalo 2	Harlan, Ky.	St. Louis 1
Chicago 1	Houston 2	Salt Lake City 1
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Jeffrey Mfg. Co. Ltd., Montreal, Canada
 British Jeffrey-Diamond Ltd., Wakefield, England
 Jeffrey-Galion (Pty.) Ltd., Johannesburg, S. A.
 The Galien Iron Works & Mfg. Co., Galien and Bucyrus, Ohio
 Galien (Great Britain Ltd.), Wakefield, England
 The Ohio Malleable Iron Co., Columbus, Ohio
 The Kilbourne & Jacobs Mfg. Co., Columbus, Ohio

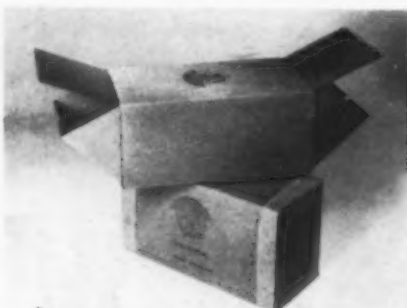
SHIPPING CONTAINER CUTS HANDLING OF SMALL PARTS

A lot of the trouble involved in handling small parts can be eliminated with a new packaging unit called the Bin-Pak. It can be used as a shipping, storing and dispensing container for small wooden, plastic, or metal parts.



Unit is a standard rack.

Illustrations show Bin-Pak's advantages to the small parts customer. Constructed of corrugated board with a sleeve running through the entire length, with scoop ends that pull out a limited distance on both ends, it drastically cuts down the material handling from receiving room to work station. In one company, seven separate operations were reduced to three. Flaps, when taped, seal the ends of



Bottom: Bin-Pak sealed for delivery. Top: Both ends open for quick use.

the box. Because of its uniformity and ease of stacking, the container is more easily handled and palletized than large bags, barrels, or ill-assorted boxes.

Bin-Pak fits any Berger, Lyons, General Fireproofing or other standard storage racks. Inventory can be taken rapidly by keeping a running record of the contents on a label on the front. Bin-Paks are reusable. The manufacturer is Bird & Son, East Walpole, Mass.

WAREHOUSEMEN JOIN STEEL INDUSTRY SCRAP PROGRAM

The Steel Industry Scrap Mobilization Program, announced last month, is being augmented by the efforts of 7,000 steel warehouse salesmen throughout the country. The warehousemen will join other industry representatives in channeling back into mills and foundries an additional million tons of vital steel scrap during the balance of this year.

Steel warehouses are the normal sources of supply to hundreds of thousands of relatively small manufacturers and small consumers of steel. Every steel customer,

regardless of size, will be visited by warehouse representatives and urged to cooperate in the nation's scrap salvage campaign.

Manufacturers will be requested to collect and sell all dormant scrap to reputable scrap dealers and brokers who have immediate outlets for this material.

The steel warehouse program is already underway. Responsibility has been accepted for scrap collections in 64 of the 334 districts set up by the Steel Industry Scrap Mobilization Committee which cover the entire country. Warehouse executives have been appointed to direct the collections in each of these 64 districts. The remaining 270 districts will be under the supervision of the Steel Industry.

Warehouse salesmen will concentrate on the more remote sections of the country because they usually solicit in wider areas than do the sales personnel of steel mills who are also participating in this drive. However, in the heavily industrialized communities, warehouse executives will assist steel mill scrap collection officials.

Warehouse salesmen will personally interview top executives of steel consuming companies and explain the need for immediate cooperation. Information will be made available in each instance to facilitate handling and rapid disposal of scrap through established channels.

Announcement of the move was made by Walter S. Doxsey, president of the American Steel Warehouse Association.

NITROCELLULOSE LACQUER LEAST VULNERABLE TO SHORTAGES

Of all the production-line finishes in use today, nitrocellulose lacquer is the least vulnerable of shortages, states bulletin issued by the Cellulose Products Department of the Hercules Powder Company.

There is ample production capacity for both nitrocellulose and lacquers to take care of military and essential civilian demands, the statement continues. Lacquer formulations are so flexible that lacquer is not tied to any one critical material, or to any group of materials. Large-scale production capacity exists, not only for the finished lacquers, but also for the nitrocellulose and for the other materials which go to make up lacquers.

Whenever possible, lacquer should be applied by the hot-spray process in order to conserve solvents, as well as to save production man-hours. For example, a typical lacquer thinned to 21% solids for cold-spraying uses 3-3/4 pounds of solvent to lay down one pound of solids. At 30% solids and thinned to spraying viscosity by the use of heat, only 2-1/3 pounds of solvent are used for each pound of solids. Therefore, 61.5% of the solvent needed at 30% with hot-spray techniques is wasted by continuing to spray cold, at 21%. Thicker coatings are deposited which means that fewer passes are needed and finishing man-hours are cut to a minimum.

The bulletin lists a number of uses for which existing specifications call for lacquers.

(Please turn to page 356)

**Utility hose of 101 uses
around the plant or in the field . . .**



CMH REX-TUBE Interlocked Flexible Metal Hose

IF you convey steam, tar, asphalt, vegetable oils, hydrocarbons or similar substances between relatively movable parts, CMH REX-TUBE Type RT-15 flexible metal hose does the job economically and dependably. REX-TUBE Type RT-15 combines the long life and durability of metal with an exceptionally high degree of flexibility. Further, it is non-aging, non-contaminating and non-collapsible.

REX-TUBE Type RT-15 is of fully interlocked design in bronze or steel with asbestos packing. (See cross-section above). Suitable for temperatures up to 600° F; pressures to 500 psi. Sizes range from 1/2" I.D. through 12" I.D.

CMH distributors are located in principal centers . . . see your classified telephone directory or write for the name of the distributor nearest you.



Top photo—CMH REX-TUBE Type RT-15 being used to steam out a storage tank. Middle photo—CMH REX-TUBE Type RT-15 used as a gas connection for a furnace. Bottom photo—CMH REX-TUBE Type RT-15 used for unloading a tank car.

Flexon identifies
CMH products that
have served industry
for over 49 years.



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1316 S. Third Ave. • Maywood, Ill. • Plants at Maywood, Elgin, Rock Falls, and Savanna, Ill.
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**ONE DEPENDABLE SOURCE
for every flexible metal hose requirement**

Convuluted and Corrugated Flexible Metal Hose in a Variety of Metals • Expansion Joints for Piping Systems
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IS AIR COSTING YOU MONEY

Air cost money? You bet it does... hot air, stagnant air, disagreeable odors cost plenty in terms of employe efficiency and customer relationships.



TO HELP YOU SOLVE YOUR VENTILATION PROBLEMS...

in stores, offices and institutions, here are two authoritative catalogs. They include plans for effective fan installations, plus complete product information on dependable Emerson-Electric Exhaust Fans and Air Circulators.

Make air an asset, not a problem... write for these catalogs today! Both are yours with no obligation.

THE EMERSON ELECTRIC MFG. CO., ST. LOUIS 21, MO.

The Emerson Electric Mfg. Co.,
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ELECTRIC
APPLIANCES



MAGNETIC FINDER LOCATES UNDERFLOOR RACEWAY OUTLETS

Working on the magnetic draw principle and designed to locate concealed outlets in steel underfloor raceways, the Magnetic Outlet Finder has just been announced by National Electric Products Corporation, Pittsburgh 19, Pa. In use the Finder is placed on the floor surface—wood, concrete or linoleum—and moved about by hand. There is a noticeable "draw" when the finder passes over the steel duct, which draw increases as the finder approaches a submerged outlet. The maximum pull is exerted when the finder is centered over the outlet, thus giving positive identification and location for cutting through the finished floor. Inside a brass housing there is a permanent magnet, which has a floor penetration range up to 1½-in. The magnet is designed for life-long service and the compact construction assures ease and simplicity of operation. The size of the Magnetic Outlet Finder is 2¼-in. high by 2¼-in. in diameter, the weight being approximately 2¼-lb.

1 1 1

NEW SELF-DUMPING TRAILER INTRODUCED BY PHILLIPS



A new model self-dumping, one cubic yard-capacity "Phil-Dump" Trailer has been added to the Phillips Mine & Mill Company's line of industrial materials handling trailers. This new item, which can be pushed by hand or handled by a fork lift truck, has been designated the Model SRF-1 "Phil-Dump".

Claimed by the manufacturer to be easy to operate and versatile in service, this "Phil-Dump" features a self-dumping hopper, held to prevent accidental dumping by a safety lock with a safety catch. Balance of the hopper is such that when the lock is released the hopper dumps its load, and then returns to the loading position. The lock then automatically engages, holding the hopper in place. Without danger of tipping over, it can be dumped from a fork lift truck in the "elevated" position. This feature is valuable in such operations as emptying scrap into gondola type freight cars.

Design includes rubber tired and cast-er rear wheels, permitting the trailer to be pushed easily by one man. Built of heavy gauge steel with rolled edges to prevent injury to personnel or load, this

(Please turn to page 358)

Your Stamping Ground for new products



with *Carpenter* Stainless

• Let's say you have a really good idea for an improved product in 195X. But there's just one hitch. You will need a Stainless Steel that has a combination of properties different from any Stainless ever made.

You might need the rustproof qualities of Stainless combined with special hardness limits to control spring-back of formed parts. Or, special tolerances combined

with extreme ductility might be your answer to producing that good idea at a profit.

The job shown here was just that ticklish, when someone said, 'Let's call Carpenter'. If that sounds 'too easy' a way to solve a Stainless engineering problem, try it yourself. Drop us a line about your future products and the special things you would like Stainless Steel to do for you.

Doing the unusual with Stainless is a

habit here at Carpenter. For example, one new steel is Carpenter Stainless No. 10, a chrome-nickel grade with an exceptionally low rate of work hardening. Maybe it has a place in your future planning, to solve the problem of cold working that can add to fabricating costs. Stainless No. 10 and many other Carpenter Stainless Steels are described in our 'Working Data' book. Would you like a copy?

The Carpenter Steel Company, 182 W. Bern St., Reading, Pa.
Export Department: Carpenter Steel Co., Reading, Pa.—"CARSTEELCO"



Carpenter
STAINLESS STEEL
takes the problems out of production



MEMO

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Deep Down in Dixie

TO: **Purchasing Agents**
Everywhere

SUBJECT: **GIFTS FOR CHRISTMAS**

For GOODNESS Sake, please wire or write at once for our new 1951 illustrated folder, describing ARTHUR BAUER'S PLANTATION PRESERVES and RELISHES, a gift that's sure to please.

Choice of 10 fine Gift Box Assortments, ranging from \$2.95 to \$24.95, with selections of our famed good-eating specialties.



Prepared with tender care from taste-tested old Southern plantation recipes: Artichoke Relish — Spiced Watermelon Rind — Orange Marmalade — Whole Peach Pickle — Peach-Pineapple Preserves — Spiced Cinnamon Pears — Clear Guava Jelly and others . . . Also, our old fashioned Chewy Pecan Pralines and delicious Orange-Pecan Stuffed Dates.

**CHARGE ACCOUNTS SOLICITED
FROM RATED FIRMS**

Special Discounts Offered on Orders of 50 or More Identical Packages

**Arthur Bauer's
PLANTATION**

Walterboro 7, S. C.

GUARANTEED TO PLEASE, OR MONEY REFUNDED

INDIVIDUAL CUTTING OIL SANITATION

Here's how to prevent costly coolant spoilage and eliminate foul odors: ask your DOLGE Service Man to take samples of your coolant for free bacteriological and chemical analysis. A complete laboratory report will show the correct coolant handling method for your particular operation.

Only if tests warrant it will a DOLGE STERIDOL GERMICIDE be recommended — a "tailor-made" preparation to meet your exact needs. Used as directed it will not irritate the skin or corrode metals. The cost?—Far less than a cent per gallon of coolant!

Write for Booklet "Cutting Oil Sanitation".

STERIDOL

Dependable
DOLGE

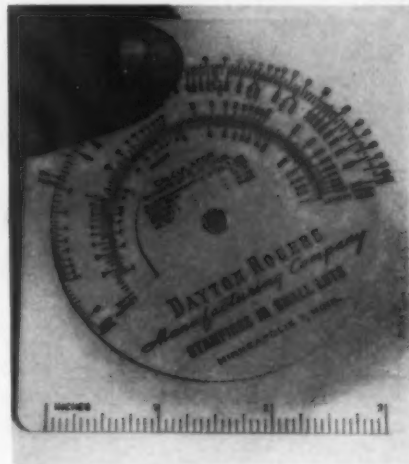
WESTPORT, CONNECTICUT

(Continued from page 356)

"Phil-Dump" Trailer is suitable for hauling and unloading scrap, castings, stampings, wire, cuttings, sand, fertilizer, powdered chemicals, etc.

For additional details, prices and specifications, write this publication or direct to Phillips Mine & Mill Supply Company, 2305 Jane Street, Pittsburgh 3, Pa.

CALCULATOR SIMPLIFIES DETERMINING WEIGHT OF SHEET METAL



Celluloid weight calculator, 3½" x 4" in size, for quick determination of the weight of steel, aluminum, iron, copper, bronze and lead sheets, is available on letterhead request from the Dayton Rogers Manufacturing Co., 2824 13th Ave., South, Minneapolis, Minn.

SMALL CONTINUOUS FURNACE DEVELOPED BY NBS

A small continuous-belt furnace has recently been designed and constructed by the National Bureau of Standards Electronics Laboratory. Smaller than commercially-available continuous furnaces such as those used in the glass industry the new furnace is well suited for quantities somewhat too large to be efficiently handled by batch-type furnaces. While the unit was designed primarily for firing printed circuits, to meet the needs of the printed circuit program sponsored at NBS by the Navy Bureau of Aeronautics, it could be equally valuable for firing or annealing moderate quantities of other materials, particularly in laboratory or pilot-plant installations.

The continuous furnace has proved highly useful in the NBS printed circuit laboratory. It affords firing capacity fully adequate to the laboratory's needs, whereas the combined capacity of seven batch-type furnaces previously in use proved frequently inadequate. Floor space requirements of the new unit are modest: 26 inches by 54 inches. Utility of the furnace is enhanced by use of an automatic timer to turn it on before the beginning and off after the end of the working day.

(Please turn to page 360)



**FOR FASTER, SMOOTHER CUTTING
... COST CUTTING, TOO!**

DISSTON BITE-RITE® FILES

Files will soon have to work harder than ever with defense needs on the increase—in machine tool shops . . . in metal processing, aircraft, and ordnance plants . . . in shipyards and automotive plants, to mention but a few. And for the toughest kinds of high-precision work—for jobs where files must cut smoothly, quickly, without spoilage—the files to use are Disston BITE-RITE! Disston BITE-RITE Files help you lick the jobs that lick average tools; are made in a complete range of popular sizes and patterns including the new double-cut wavy-tooth patterns. Use BITE-RITE Files for longer-life, greater economy, better all around results.

*Get Disston BITE-RITE Files
from your local Disston Distributor*

"SCRAP TURNED IN . . . IS STEEL TURNED OUT!"

Steel mills urgently need more scrap *now*! Help yourself get more steel by keeping your scrap moving into channels serving steel mills.

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DISSTON®



**DISSTON HACK SAW
BLADES**

—for a wide variety of hand and machine metal cutting operations.

Four types: HIGH SPEED STEEL; DI-MOL; CHROMOL*; and DURAFLEX*.



**DISSTON METAL-CUTTING
BAND SAWS**

A complete line—Hard-Edge Flexible Back, in both regular and buttress tooth patterns. Also Hardened Throughout.

*Reg. U.S. Pat. Off.



DISSTON "Fight Waste" PROGRAM

A free service for industrial tool users. Individual instruction cards on 31 different cutting tools help workmen get more out of tools and materials, increase production and cut costs by stopping waste. Write for copy of "The Pocket Foreman" containing complete information.

CHICAGO Mounted WHEELS



FIRST

AND

Finest

- Better Wheels for Every Application
- Better Selection — Wide Variety
- Deliveries Now—or When You Need Them

Once you try Chicago Mounted Wheels right in your own plant, on your own type of production, you'll see for yourself why they lead the field. That's all the convincing you'll ever need! And for a real production surprise . . . try "79E" Bonded Wheels; we earnestly and sincerely believe they're the finest in the market. Deliveries? Now . . . or when you need them . . . without delay. For good mounted wheels quick, specify Chicago Mounted Wheels!

Mail this coupon today

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1101 West Monroe St., Chicago 7, Illinois

CHICAGO WHEEL & MFG. CO.
1101 West Monroe St., Dept. P
Chicago 7, Illinois

We use Mounted Wheels. Please send us full information.

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**SAVES \$15,000 ANNUALLY
HANDLING STEEL**



This specially-built, 3-ton capacity, double-bridge monorail crane handles 4,500,000 pounds of bar stock annually in General Electric's Small and Medium Motor Divisions' manufacturing operation at Lynn, Mass.

Main element of the equipment is the grab, a steel frame suspended by pulley and cable, which is equipped with three movable forks and safety prongs. Flexibility of the arrangement provides quick, efficient, and selective handling of stock that consists of 12 shapes, 75 specifications, and 800 sizes.

Seven control functions are involved in the crane's operation: longitudinal and cross travel of the cab, rotation of cab and grab (360 degrees), vertical travel of grab (floor clearance from 1 in. to 9 ft 6 in., tilting of grab (8 degrees forward, 12 degrees backward), rotation of forks and prongs (90 degrees), and raising and lowering of prongs.

Total cost of the installation was recovered in three years, according to G-E engineers, and net annual project savings over the old handling method amount to \$15,000. Other advantages include better housekeeping and a 50 per cent reduction in floor space requirements.

SUBSTITUTE FOR TUNGSTEN

Recently, the nation was shocked by revelation that someone in Washington neglected, during the postwar years, to build up a supply of tungsten, one of our most important alloys states the National Patent Council, Gary, Ind. Our principal sources of supply for tungsten were China and Korea. On the heels of this revelation comes the announcement that a rare metal, rhenium, has been produced in the chemical laboratory at the University of Tennessee. Rhenium compares with tungsten, as it has about the same high melting point of 3,100 degrees Centigrade, and therefore is a likely substitute. In some respects, it is

(Please turn to page 362)

STEEL CASTINGS

**... DOUBLE in QUALITY
of PERFORMANCE**

Yes . . . Atlantic Steel Castings "double in character by doubling in quality of performance. An Atlantic steel casting consists of specified high quality properties to produce a steel casting of uniform structures . . . with desirable machinability. There's less machining-off of waste metal . . . less sand-holes . . . less hard-spots to damage cutting tools

Put these Atlantic advantages together and your end-product becomes a finely-machined piece of work doubling in quality of performance. Such quality of performance will increase your reputation, as it has for Atlantic since 1915. Atlantic produces steel castings for most every conceivable industrial, commercial and transportation use. So, next time, specify Atlantic Steel Castings . . . or let us quote on your present job.

Write for the Atlantic Axioms, our helpful, informative and interesting house organ.



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FASTEN FAST WITH
CLARK FASTENERS**

**BOLTS . . . NUTS
RIVETS . . . SCREWS**
...Built right...to hold tight—their dependability has been a recognized characteristic of CLARK FASTENERS for close to a Century.





**THEY'VE GOT TO BE RIGHT
IN THE OIL COUNTRY**

If you want to see tough jobs for pressure gauges go out into the oil country. No field hurls quite as tough a challenge at the instrument maker. Drilling operations call for gauges that will stand up under extreme vibration and pulsation. On the pipe lines it's widely pulsating pressures; on the flowing wells, unexpected pressure surges.

We met the challenge of the oil country years ago with instruments that have given oil men a new conception of lasting accuracy in pressure gauges and dial thermometers. There could be no higher tribute to Marsh quality, stamina, and precision than the preference shown for Marsh instruments throughout the country where "they've got to be right."

Not only in the petroleum field, but in every field where requirements are exacting, Marsh Gauges and Thermometers have become "The Standard of Accuracy." That's why you find Marsh gauges on leading makes of boilers, pumps, compressors and other equipment requiring pressure gauges. That is why you should insist on Marsh for every gauge or thermometer need throughout your plant.

MARSH INSTRUMENT CO. Sales affiliate of Jas. P. Marsh Corporation
DEPT. G, SKOKIE, ILL.

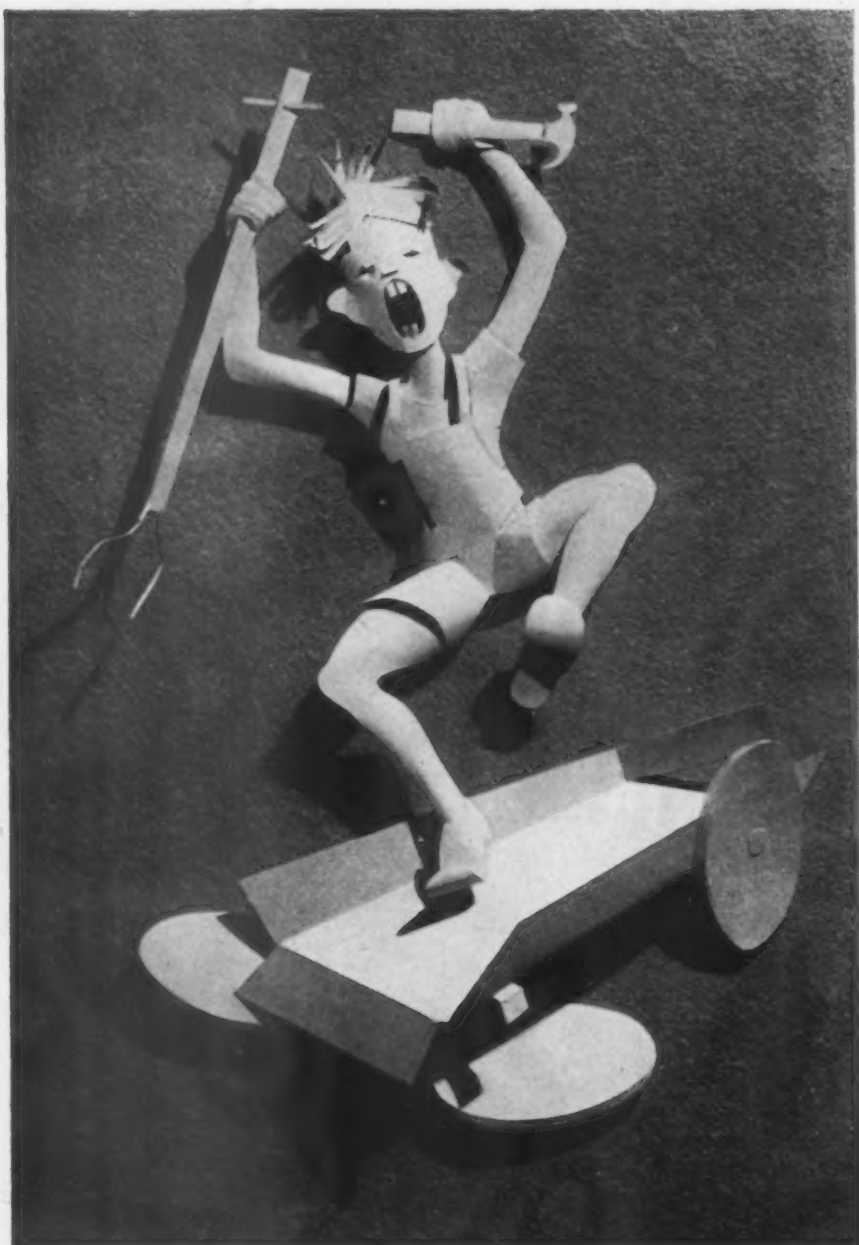
Export Dept., 155 E. 44th St., New York, N. Y.



This recently developed "Xmas Tree" Gauge for oil wells is typical of the wide range of Marsh Gauges for all services.



MARSH GAUGES



DO YOU HAVE A PAPER PROBLEM-CHILD?

If you are using a paper that doesn't quite meet your needs — or need a type of paper not available — we'd like to offer our help. As specialists in combining unusual fibers to make papers with unusual characteristics, we may already have the solution to your problem. If not, our paper technicians may be able to develop *exactly* what you need.

It will pay you to check with our representatives *today*!



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MANUFACTURERS OF SPECIAL TECHNICAL & INDUSTRIAL PAPERS

H&V PAPERS INCLUDE: *Electrical Insulating • Abrasive Backing • Filter • Saturating • Gasket • Tag • Red Wallet • Wet Strength • Industrial Crepe, Black • Pattern • Coating Base Specialties*

(Continued from page 360)

said to be superior to tungsten, especially in the field of electronics. It has a longer life than tungsten when used at any given temperature. The university laboratory produced rhenium from molybdenum roaster flue dust, and has supplied samples to 100 research laboratories. It was first produced commercially from ore in Norway in 1930. Production stopped at the beginning of World War II.

Now that rhenium has been produced in one laboratory, from our own sources in this country, it seems reasonable to hope that some of our highly efficient industrial laboratories, spurred on by the reward offered through our Patent System, will invent and patent practical processes to produce rhenium commercially and thus go far toward alleviating our immediate need of tungsten.

↑ ↑ ↑

GIANT GEAR FORGINGS



Forged, heat-treated and rough-machined in The National Supply Company's plant at Torrance, California, these ring gears are now in use on speed increaser units at pumping stations along the 1000-mile mid-valley pipeline designed to bring 150,000 barrels of oil a day from four south-central states into Ohio. These rings are of SAE 4340 forged alloy steel, 83" OD x 76" ID x 21" face, the rough weight each being 15,255 lbs. They are the outer rims of the bull gear for each of the eight 1700 H.P. speed increaser units along the pipeline. Pacific-Western Gear Company completed the manufacture of the gears. The pipeline varies in diameter from 20" to 22" and is the \$55-million undertaking of the Sun Oil Company and Sohio. The speed increaser units are the largest ever built for use on any pipeline in the United States.

↑ ↑ ↑

INVENTS NEW METHOD FOR SHIPPING FRAGILE ARTICLES

Gaylord Loth of Sandusky, Ohio, has been awarded a patent for a new method of protecting highly-finished fragile articles in shipments.

Mr. Loth, who is a packaging expert for The Hinde & Dauch Paper Company of Sandusky, has developed a completely new approach to the problem of shipping such items as porcelain and enameled kitchen cabinets and similar products.

His device consists of two corrugated isolating buffers which are placed on (Please turn to page 364)



How to Get Assembly Certified* Aluminum Parts for Rearmament

First, look for a supplier who specializes in aluminum . . . *like Alcoa*.

Choose one who's tooled for the faster machining speeds of aluminum . . . *like Alcoa*.

Buy from a supplier . . . *like Alcoa* . . . whose continuous quality control minimizes rejections and who provides you with parts that fit perfectly in every assembly. Buy with the idea of performing the fewest possible secondary operations in your own shop.

*ALCOA FACILITIES ASSURE PARTS THAT FIT

Machines—Turret lathes, single and multiple-spindle automatics—handling all types of rod, bar and tubing up to 3½ inches in diameter.

Second Operations—Drilling, tapping, centerless grinding, milling, press forming, marking, stamping, thread rolling, and many more.

Finishing—Tumbling, burnishing, chemical dip, buffing, plain or colored anodizing.

GET A BID FROM ALCOA

Call in your Alcoa specialist, listed under "aluminum" in your classified phone book. Or send prints to ALUMINUM COMPANY OF AMERICA, 853K Gulf Bldg., Pittsburgh 19, Pa.

ALCOA

ALUMINUM SCREW MACHINE
PRODUCTS FOR DEFENSE



Looking for subcontractors for defense contracts?

New York State, through its "Industrial Preparedness Survey," has inventoried the production facilities available within the State. Use this free public service to help you find the subcontractor you need.

New York State is ready to help you locate qualified subcontractors to supply parts or assemblies.

This assistance is based on a recently completed inventory of metalworking, woodworking, paper, textile and plastic facilities.

This information, compiled by the N. Y. State Department of Commerce from thousands of questionnaires sent to all known companies in these industries, has been classified, coded and recorded so that the number, kind and capacity of machines can be easily found and identified.

Thus, firms with the required facilities and capacity can be quickly suggested as subcontractors.

Any inquiry from you will be handled exactly as you specify. For example, you may wish to contact a list of firms qualified by their general facilities or special tools to perform the work desired. Or, you may prefer to have us determine the current interest of these firms by outlining to them such details as you may submit to us. If you do not wish to have your identity disclosed, we can forward the result of our circularization to you for direct contact. In every instance, the New York firms suggested will be those which are known to have the required equipment based on an examination of our 1951 "Industrial Preparedness Survey."

Just one of many services—Aid in locating subcontractors is just one of the many services available to both large and small manufacturers. A special bulletin describes in detail the defense services of New York State Department of Commerce. Copies are free.

*Write for
bulletin*



New York State Department of Commerce
Room 121, 112 State St., Albany 7, N. Y.

Please send me a copy of your free bulletin "Defense Services of the New York State Department of Commerce."

Name _____

Position _____

Company _____

Street _____

City _____ State _____

(Continued from page 362)

the top and the bottom of the article to be packed. The unit then packed in the shipping box provides an air cell completely surrounding the article which is suspended from all walls of the box.

Mr. Loth's invention also permits the packing of highly-finished heavy articles such as book cases and cabinets in conventional shipping boxes, eliminating damage and refinishing costs. He has assigned manufacturing rights to Hinde & Dauch.

1 1 1

PROTECTIVE COVERS FOR IDLE MACHINERY



The South Bend Lathe Works, South Bend 22, Ind., is marketing plastic water-proof covers for the protection of idle machines against the harmful action of grease water and dust. The covers, in maroon, have machine stitched bound edges and come in the following six sizes: 12 x 28 x 28"; 21 x 37 x 24"; 32 x 48 x 17"; 32 x 60 x 17"; 38 x 72 x 25"; and 38 x 96 x 25".

1 1 1

IMPROVED CATALYSTS IN TABLET FORM FOR CHEMICAL PROCESSING INDUSTRY

Catalysts and catalyst supports now being produced in tablet form are offering many advantages to chemical processors over the previously employed irregular masses. Small, uniform particles can control the reaction speed more critically as well as provide an improved surface-to-mass ratio, necessary in certain types of catalytic reactions.

In addition, tablets in fine material form are superior for tower packing and offer higher resistance to crushing and erosion.

Since almost all catalysts are either elemental metals or their oxides, it is not always possible for the oxide to adhere to the parent metal and form a powder as such. It therefore becomes necessary to form them into some shape, as a tablet. Preparation of catalysts in this more advantageous form is now being accomplished on tableting presses of the F. J. Stokes Machine Company, Philadelphia, Pa., in the same manner as the production of aspirin for the pharmaceutical industry.

Many companies like the Girdler Corporation, Louisville, Kentucky, cata-

(Please turn to page 366)

DON SPARE

(Traffic Manager, The National Drug Co.
of Philadelphia, Pa.)

PRESCRIBES...



...for fastest, safest way to ship
pharmaceuticals and biologicals

Don Spare says: "When you ship products like ours that call for consistent speed and safety plus all the other shipping benefits in the book, your 'cheapest way to ship' involves more than rates alone. Before choosing the method for distributing the pharmaceuticals and biologicals of The National Drug Co. throughout the country, I considered

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Railway Express was the only carrier that offered all these benefits without any hidden costs. For the daily distribution of The National Drugs to multiple points, Railway Express is the fast, safe 'cheapest way to ship'."

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ALWAYS ASK



THE EXPRESS MAN

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handling experts everywhere
are talking about the

NEW TOWMOTORS!



Model 480-P, one of five New Towmotors which include many new engineering features.

Look at these features of the new TOWMOTOR:

- Extra heavy duty frame • Drop forge beam steering axle • Functionally styled cowl • Full vision instrument panel • Precision controls in easy reach • Super-strength forks • Maximum free lift • Engineered tire equipment • Double universal joint • Precision mast construction • Maximum operating comfort • Heavy duty hydraulic brakes • One piece drive axle assembly • Industrial-type engines

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more steel
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There's one way to keep steel production at the top—and keep workers comfortable—insure a plentiful supply of cool, refreshing water throughout the plant. In most steel mills, quite naturally, you'll find Halsey Taylor Electric Coolers do the job—and do it better! Extra hygienic features, trouble-proof, economical!

The Halsey W. Taylor Co., Warren, O.



HALSEY TAYLOR
COOLERS & FOUNTAINS



Two-stream Projector
with Automatic
Stream Control

(Continued from page 364)
lyst specialists, employ a battery of Stokes presses for this fast, economical means of catalyst tablet production. Tab-letting rates of 4000 per minute on each machine find Stokes presses at Girdler producing tablets of absolute uniformity of size, shape, density, and surface texture for the chemical processing industry.

1 1 1

NEW TRACTOR PERMITS OPERATION IN NARROW AISLES

A new motorized tractor that automatically engages various types of industrial trailers, and permits operation in very narrow aisles and accurate spotting of loaded trailers, was recently announced by Yale & Towne Manufacturing Co., 1000 Roosevelt Boulevard, Philadelphia 15, Pa.



Small rear wheels of tractor are clear of the ground, making trailer an integral part of the tractor. Since "Grip Tow" automatically engages the trailer, operators can spend more productive minutes transporting material.

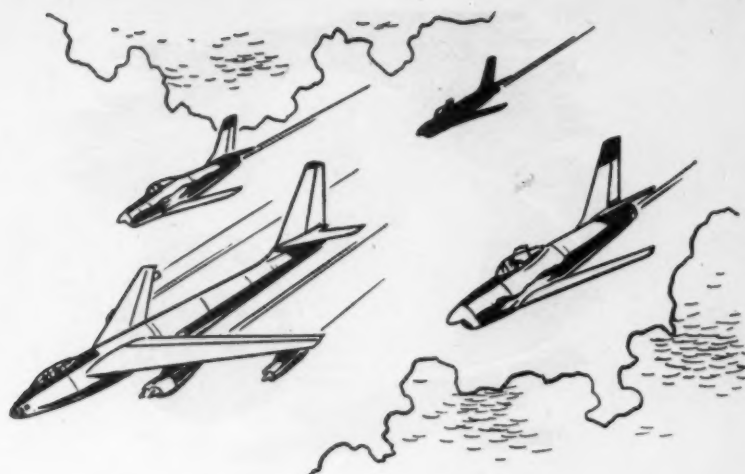
In actual operation on a large trailer it is possible with this device to engage the end of a caster type trailer and make a right angle turn with the center of the turn being the fixed axle of the trailer. This gives the shortest steering radius possible with a given trailer. The new trailer has been named the "Grip Tow". It will operate successfully with almost any caster type trailer which has some projection of edge which gripping mechanism of the tractor can engage.

1 1 1

SPONGE RUBBER CORE USED TO FILL PROPELLER SHELL

An airplane propeller filled with sponge rubber is being made by the Hamilton Standard Division of United Aircraft Corporation. Light as a feather, bone hard, and strong, the hard sponge is used to fill the void between propeller blade core and shell, keeping the latter from vibrating in and out under extreme pressure, and supporting it against the impact of rocks, ice, and other material thrown up by the plane's under carriage.

The new filling compound, called HS 160, has three principal components Hycar OR-15, an oil resistant rubber (Please turn to page 368)



THIS IS AMERICAN

**PHILLIPS HEADquarters for
the Aviation Industry**

**HERE'S YOUR TOP SOURCE FOR
PRECISION FASTENINGS...**

AMERICAN PHILLIPS SCREWS AND BOLTS

For high-speed, high-altitude aircraft, American produces close-tolerance screws and bolts of alloy steels, and A. N. fasteners of carbon steel, stainless steel, and selected brass and aluminum... to Air Force-Navy aeronautical standards.

The American Phillips Recess affords exceptional torquing strength, a feature which... added to precision manufacture and quality control... gives to all American products (like the screw shown above) accuracy of countersink angle, head thickness, and concentricity. This is American's contribution to uniform flushness in assembly.

... and "HI-SHEAR"* RIVET PINS

These rugged fasteners are made by American in alloy steels, to closest tolerances and highest standards of physical quality.

So on any of your fastening problems, it pays to "ask Ameri-

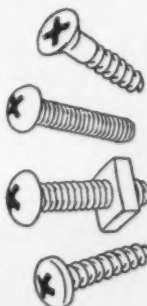
*Trademark Reg. U. S. Pat. Off.

can first," for then you get the know-how of American engineers and research experts... plus the modern facilities of one of the industry's high-volume production plants.



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around the world, it's
HOOVER BALLS

made of

CHROME STEEL • CARBON
STEEL • STAINLESS STEEL
BRASS • BRONZE AND
MONEL METAL

"America's Foremost Ball Manufacturer"

HOOVER BALL and BEARING CO.
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COSTS MONEY...**

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CAN AID YOU TO REDUCE IT**

Put conveyors to work moving cases, cartons, packages, parts, units through manufacturing or processing to storage or shipping. Speed handling operations — reduce breakage — increase safety — save manpower, time, and costs.

An experience record of more than 45 years, serving all classes of industry and business, qualifies Stand-

ard to be of expert service to you on any "package" conveyor need — roller, belt, slat, chain, push-bar, sectional, portable self-contained units — spiral chutes — pneumatic tube systems. Write—Address Dept. 000.

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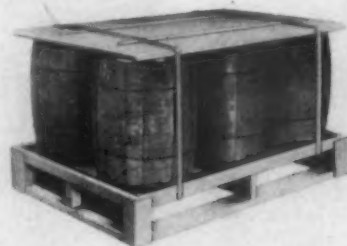
(Continued from page 366)

manufactured by the B. F. Goodrich Chemical Co., phenolic resin and nylon. Blending of Hycar nitrile rubber with compatible resins, like phenolic, is not a new concept. Phenolic resins are inherently strong, hard, but relatively brittle mass condensation polymers of phenols and aldehydes. The rubber is soft, extensible, tough and extremely adaptable. The blended product, combining the advantageous properties of each, is therefore hard, strong and extremely tough.

The new filling is said to have outstanding advantages over the Ebonite filling formerly used. It is three to four times more resistant to impact, has greater tensile and fatigue strength, greater resistance to torsion, and in addition its processing time is reduced about 25%.

Further details are available from the B. F. Goodrich Chemical Co., Rose Building, Cleveland, Ohio.

**KEG HANDLING SIMPLIFIED
BY NEW KEG PALLET**



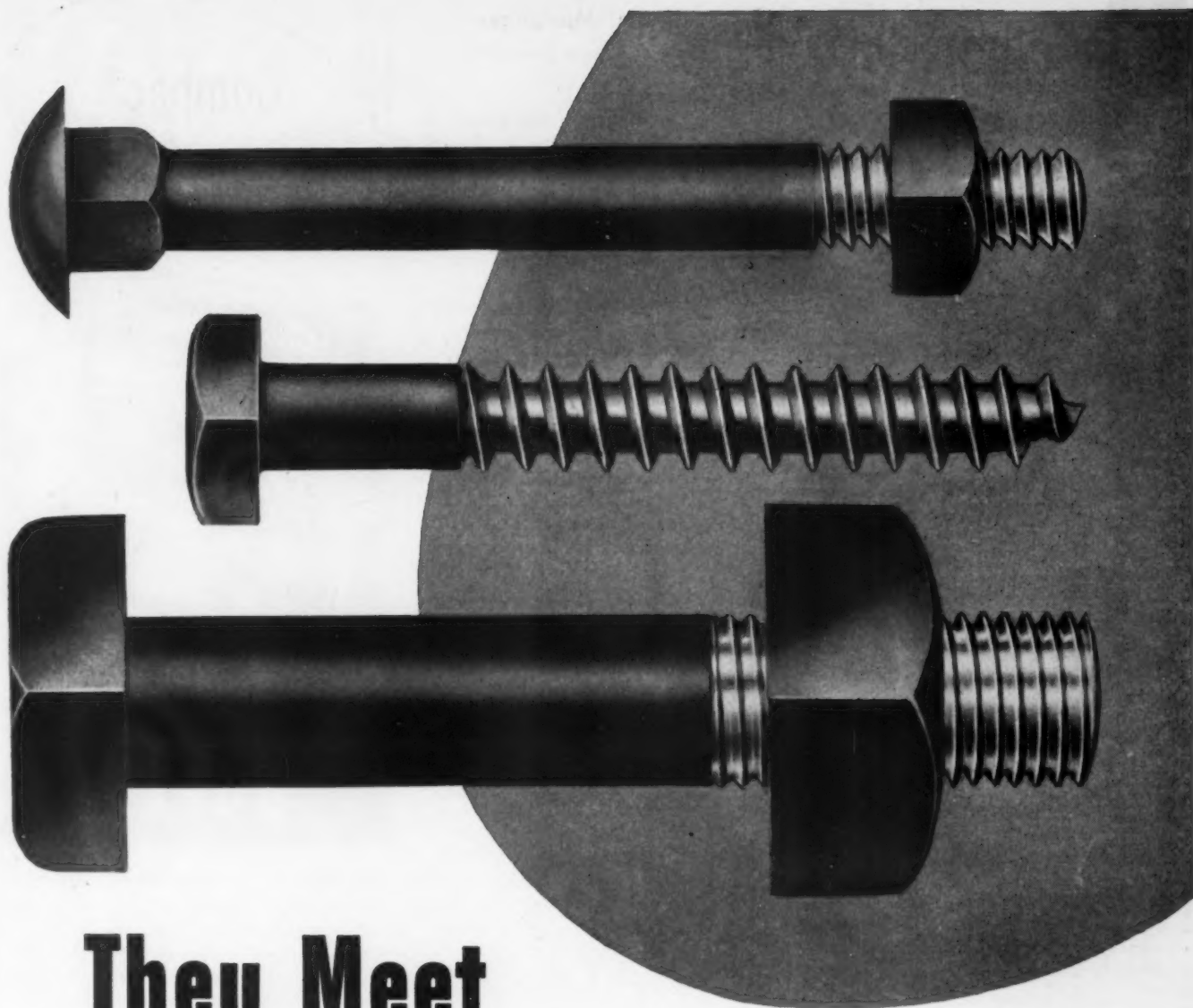
A means of simplifying the transportation and storage of hard-to-handle kegs is a recent development of Phillips Mine & Mill Supply Company, Pittsburgh, Pa. Offering improved stability in stacking and in transporting, this Model KP-6 unit consists of a steel keg pallet and a steel cover for protecting the kegs and their contents.

Designed for handling with a fork lift truck, the pallet will accommodate six standard kegs on its 42" x 28" deck. The deck is recessed slightly to prevent kegs from rolling off when the unit is being moved. The entire pallet is made of heavy gauge steel, and is welded throughout.

For protection of the keg contents and to provide additional stability in stacking, the cover is attached with steel bands. Design of this unit permits stacking to height impossible with un-palletted kegs.

CONCRETE SEALING PAINT

Paint based on Bakelite styrene plastic emulsion, for sealing concrete and cinder-block walls against penetrating dampness, has been developed by the Marvelite Paint Co., 1237 Light St., Baltimore, Md. The paint, which can be brushed or rolled on in two coats dries to a tough, long-wearing finish. It also serves as a decorative outer coating. It is available in a wide variety of colors.



They Meet Every Construction Need



Bethlehem Machine, Carriage and Lag Bolts are made in such a wide variety of sizes and types that they meet every construction requirement for standard bolts. We also produce a full line of American Standard Regular or Heavy Nuts, both square and hexagonal.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Bethlehem supplies every type of Fastener

3 pictures tell the story...



JIFFY padded shipping bags

JIFFY SHIPPING BAGS are used extensively to ship precision parts and instruments, highly finished or machined parts, accessories, hand and machine tools and similar items.

Three pictures—the 3 basic steps for speedy packing, tell the entire story of the JIFFY PADDED SHIPPING BAG for profitable, dependable and speedy shipping.

STEP 1—INSERT Simply insert into the bag the item to be shipped. No boxes to set up—no fuss—no bother.

STEP 2—CLOSE Fold over top of bag. Staple or use gummed tape. No strings, fancy closures or special "know-how" needed.

STEP 3—TAG Affix label and postage. Package is now ready for shipment.

JIFFY PADDED SHIPPING BAGS are made from strong moisture-resistant kraft with built-in "expansion" cushioning, which protects shipment from moisture, abrasion, dirt and damage during transit.

JIFFY PADDED SHIPPING BAGS are perfect for packing orders in advance, for expected orders and samples. They are ideal for C.O.D. shipments.

AVAILABLE IN 7 STANDARD SIZES

Free samples on request



JIFFY manufacturing co.
360 FLORENCE AVENUE • HILLSIDE, N. J.

Chattel Mortgages

(Continued from page 126)

\$150.00, and said:

"The evidence concerning the necessary expenditures in locating this car established that plaintiff (finance company) employed investigators specializing in this field."

Hence, this late higher court established new law that one who acquires or otherwise purchases encumbered property not only is liable for the amount owed by the defaulting purchaser, but in addition for the normal expenses incurred by the holder of the valid mortgage or conditional contract of sale in locating the property. This is so because a valid mortgage or conditional contract of sale is notice to all persons in the United States that the property is encumbered and if one fails to heed this warning, although innocently, he is liable for full financial loss sustained by the holder of the valid mortgage or conditional contract of sale. Hence, this new law is added protection to finance companies which may finance transactions involving sale of appliances, merchandise and equipment.

On the other hand, the modern law conversely places liabilities with finance companies where the testimony shows that the installment purchaser is innocent of wrong doing.

1 1 1

Graphic Stock Record

(Continued from page 93)

Stock records for each item are now maintained on two cards which are housed in facing pockets. One of these is a two-section record which, in addition to the name and description of the item, has a purchasing record and a month-by-month sales record covering a period of eight years. The other card is for the in-out-balance record.

Attached to the latter card is the visible margin index and signal chart. The active control record is maintained simply by moving a celluloid signal tab over a January-to-December scale and to their proper position on the "normal-out-order point-etc." section of the chart. As a means of executive and clerical guidance, this chart also contains a ruled section for noting stock minimum and maximum limits, order quantities, and dates.

(Please turn to page 372)

Compact Complete



Compiled for the
**INDUSTRIAL
BUYER**

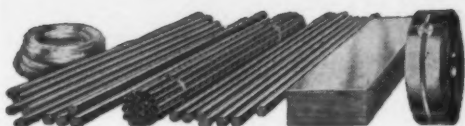
Yes, the CONOVER-MAST PURCHASING DIRECTORY is compiled especially for the industrial buyer—only listings and product facts on the machinery, parts, supplies, and materials needed by industry. All nonindustrial listings and advertisements are rigidly excluded—that's why it's so compact, easy to keep handy and use, yet complete. Besides, it has 35 pages of general information and tables for the buyer which he will not find in other directories.

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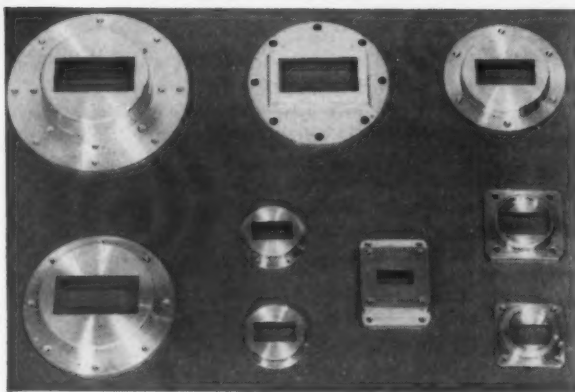
BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN



MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND.—IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL

Design of Fixtures and Correct Methods Vital in Machining



Microwave flanges machined from leaded commercial bronze. These flanges are turned, drilled, tapped and broached.

Many screw machine shops are being slowly obliged to add equipment to do secondary operations such as milling, drilling and tapping due to the stepped-up tempo of the war effort.

Since copper alloys have always been considered easy to machine, it is very easy to design holding fixtures much too light. For this same reason, it is quite simple to overlook certain methods which might help to eliminate down-time or step up production.

In milling operations, for example, in many cases fine chatter marks can be traced directly to too light holding fixtures or poor holding devices. Although it is true brass is readily cut, if the milling cutter is set up with an indicator to insure against face and side runout, not only will the cutter last longer but the finish will be better. Seldom is the cutter ground eccentrically. The trouble usually is found in a bent arbor, unaligned out-rigger or spacers with unparallel faces.

Watch Clearance Angles

After several sharpenings, it is necessary on circular milling cutters to re-grind clearance angles to prevent rubbing and burnishing. Sometimes it is necessary to step up the revolutions of the cutter to obtain the necessary feet

per minute after numerous grindings. Don't be satisfied if the job runs smoothly immediately. Experiment with feed and speed because depth of cut, number of teeth in cutter, width of cut and the general condition of the machine all enter into the picture. Perhaps conditions are such that you can gain higher production and longer tool life with a little experimentation.

Simple steps often can correct irregularities in drilling when accurate, straight holes are required.

When a drill jib suddenly starts to produce work not up to standard often the replacement of worn bushings will solve the difficulty. Bushings should be checked for concentricity as well as size before they are put in a jig.

Check Drill Size

Variations in standard drills can also cause trouble. If a tool setter selects drills which fit the drill bushing with the right amount of clearance much trouble can be avoided.

On the very ductile copper alloys chrome-plated drills often prevent galling. Sometimes fast spiral drills can be used but often the slow spiral type is more advantageous.

One cause of excessive drill wear can be overcome by not permitting the drill point to run in a bushing between operations. By completely removing the drill from the bushing not only is wear reduced but the drill is more rapidly cooled and chips washed away in the coolant.

When a bushing plate is used for drilling it is often necessary to have a split coolant flow—one hitting the top of the bushing and the other strik-

ing the work at the point of drill contact. This lower stream will also help to wash away chips during the operation and to clean the locating areas of the jig.

Hand sharpening of taps is quite common in the average shop, but where straight accurate holds are demanded it is advisable to use a drill sharpener.

Automatic drilling attachments for drill presses produce more consistently accurate parts than can be expected on a hand-fed job. This is especially noticeable on small drills where breakage is apt to be high on hand-fed operations.

Check Drilling First

When holes fail to clean up during a reaming operation, check the drilling first. A reamer will only follow the drilled hole, it will not straighten it. Although leaving too much stock for a reamer to cut is a common error, most of the trouble comes from too little stock. The reamer then burnishes rather than cuts and undersize holes usually result.

Tapping of leaded copper-base alloys rarely proves a difficult job. However, in the non-leaded alloys and copper, polished flute taps which have been chrome-plated usually give satisfactory results. The plate both reduces wear and galling.

On through holes the chip driver, or gun tap, usually does an excellent job. With blind holes a standard tap is advisable unless there is plenty of chip clearance below the tapped area.

In drilling, reaming, tapping and milling it is generally desired to have well-directed, good flow. Just as in screw machine work, the choice of cutting compound depends on the alloy being machined. As the ductility of the alloy increases so should the viscosity of the coolant. Perhaps the main variation from this rule is in tapping where the speeds are normally such that little heat is generated and a heavy cutting compound is advisable to give the greatest amount of lubrication possible. (6635)

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Give your company business friends a Christmas gift of lasting remembrance—an attractive, useful advertising specialty from Metal Arts bearing your advertising message, seal, or trademark. Hundreds of suggested items to choose from . . . all made of satin-smooth bronze by skilled Metal Arts craftsmen. Each is individually gift-boxed, ready for mailing. Write today for folder showing our business gift suggestions.

METAL ARTS COMPANY, Inc.
742 Portland Avenue Dept. 9 Rochester 21, N. Y.

Graphic Stock Record

(Continued from page 370)

Because of the historical factors made available through the fact that the facing cards cover a period of as much as eight years, our management and sales force are able to use the new inventory records for their sale control studies, so that actually we now have three important records in one—namely, the current stock records, a guide to purchasing, and a sales control record.

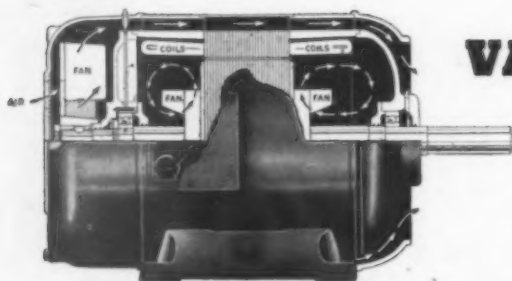
DEVELOP PORTABLE CAN AND DRUM CLEANING UNIT

A portable reconditioning and cleaning unit now under test by Quartermaster Corps technicians at Ft. Lee, Va., can handle 1000 five-gallon "blitz cans" or 500 55-gallon drums per day. Mounted on three semi-trailers, the unit knocks out dents in drums with 60-lb. air pressure, forces hot detergent inside drums to clean interiors, wire brushes and spray-paints exteriors. Power is supplied from a 6 x 6 truck carrying air compressor, 110V-20 KW, generator, and steam boiler producing 500 lbs. of steam per hour. Further details are available from Technical News Letter, Magazine and Book Branch, Room 2C765, The Pentagon, Washington 25, D. C.



POWER ECONOMY

at its money-saving best!



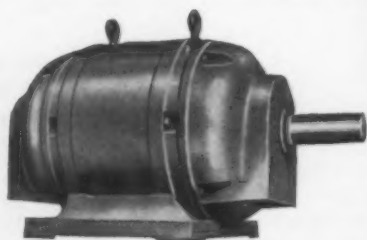
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The newest and most successful development in air cooled motors. Totally enclosed, constant speed, continuous duty, squirrel cage induction, high torque, low starting current.

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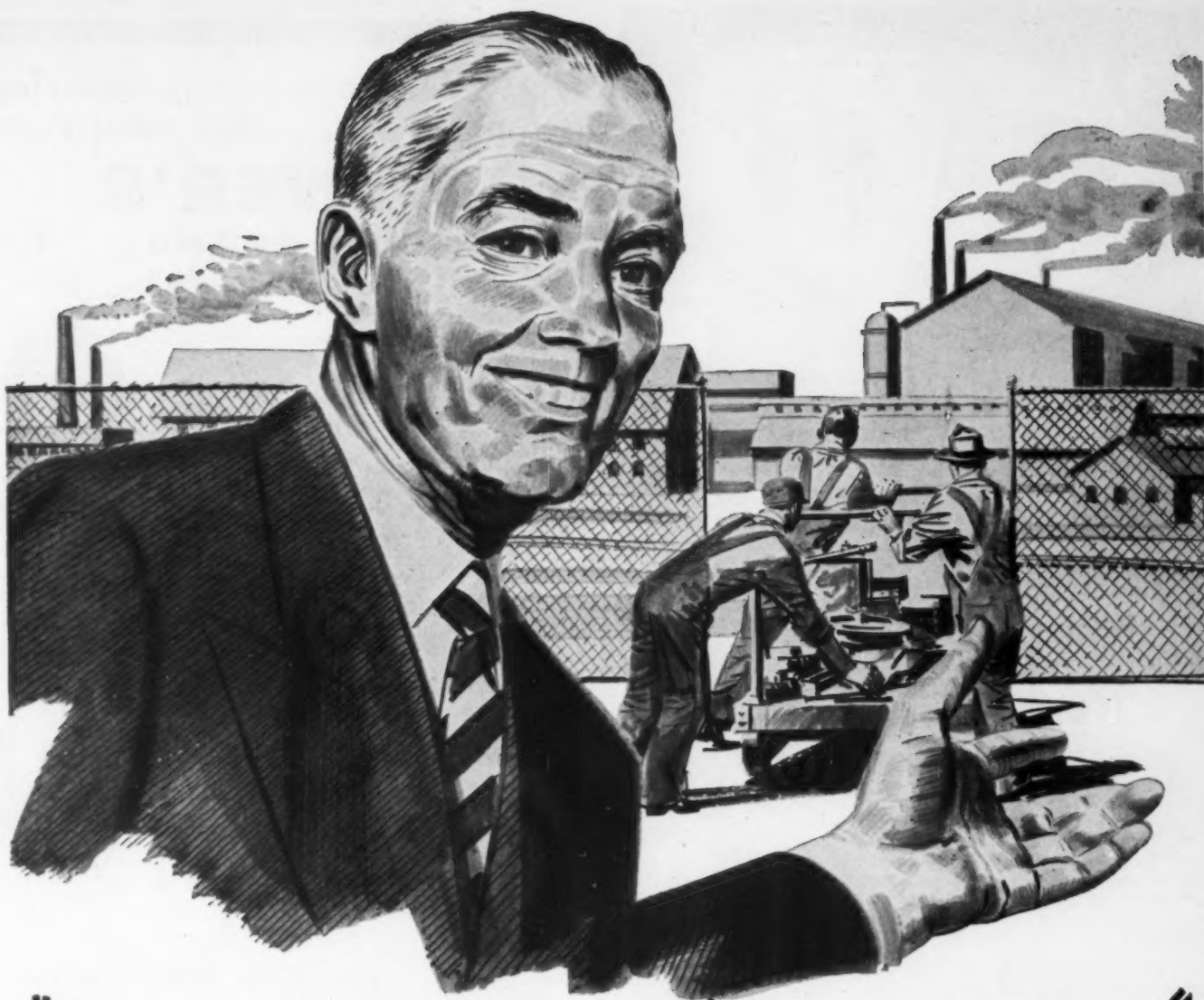
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Large or small, plain or fancy, you can count on Western for on-time delivery for all your precision parts requirements. Whether it's a simple job like the cap screw shown in C or a more difficult one like the alloy steel connecting rod bolt shown in B, Western has the know-how, men and equipment to turn them out fast, economically—and to your specifications.

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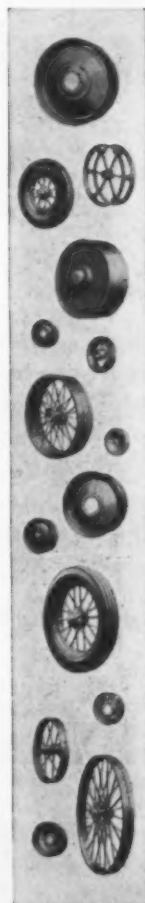
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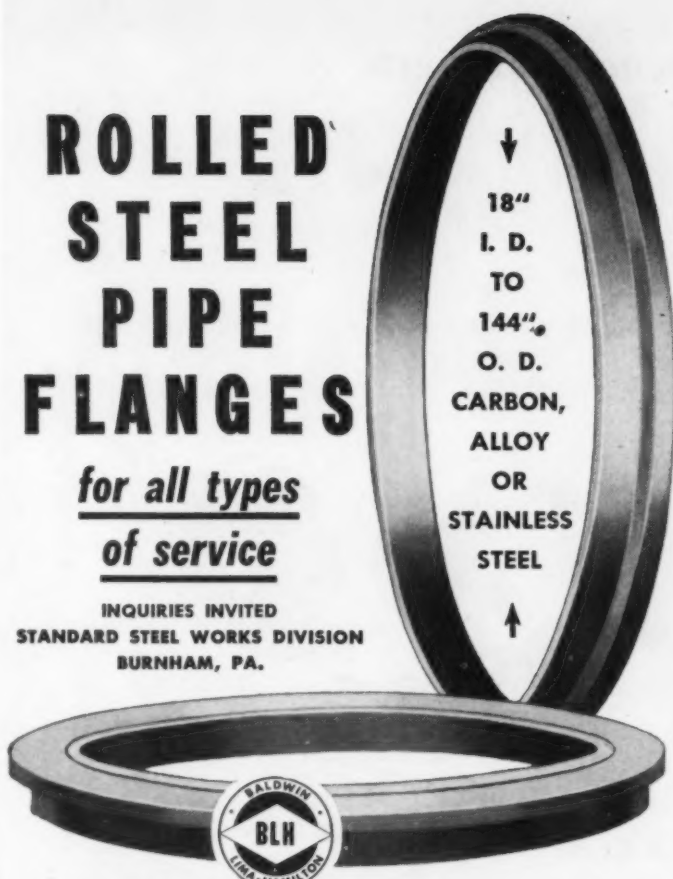
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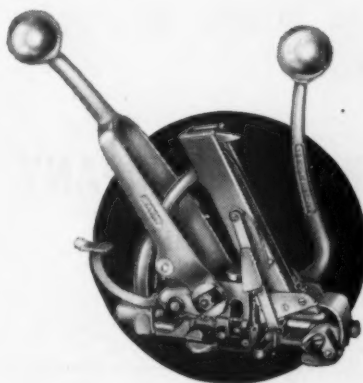


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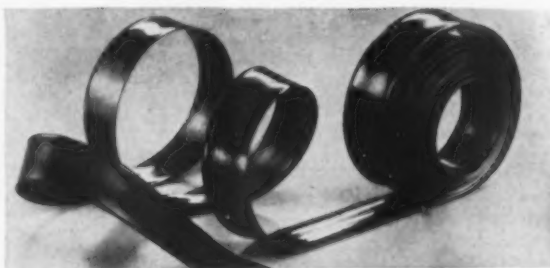
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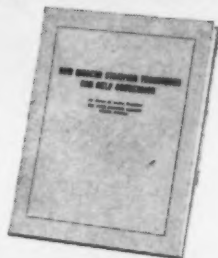
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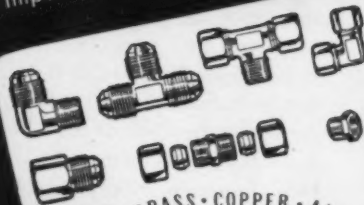
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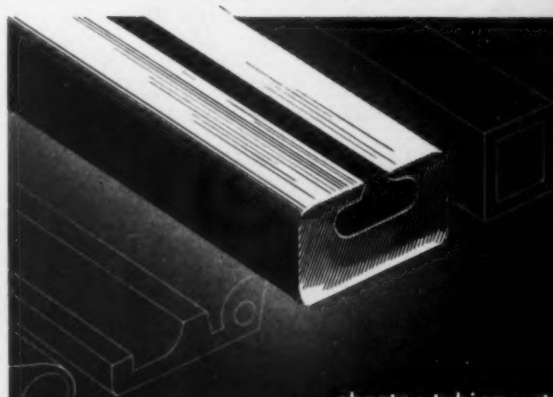
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ground is
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that must stand up

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FACTS &
FIGURES-
No. 17

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**last 3 to 4 times as long as
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For years, a manufacturer* used an asbestos glove with a leather pad. After trying the Jomac Heat-Resistant Glove, he found it lasted 3 to 4 times as long as the old combination. He has now standardized on Jomac.

* Name on request.

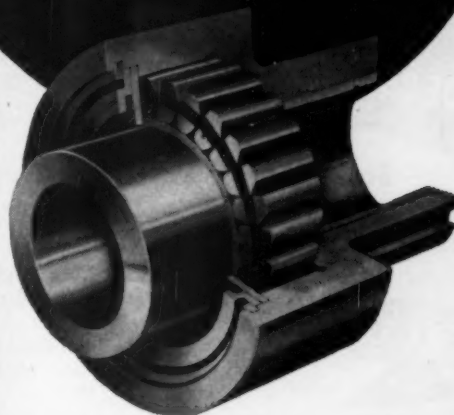
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Jomacs are an investment. They last seven or eight times as long as ordinary work gloves. Jomacs are reversible and can be worn on either hand. You wear out both sides before discarding them. Jomacs can be washed or dry-cleaned. No need to throw them away because they're dirty, greasy or oil-soaked. Jomacs stay soft after repeated washing or dry-cleaning. Dollar for dollar, your best buy is Jomacs for protection against heat or cold, rough or sharp edges.

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**transmit power
accurately, automatically**

There's outstanding quality behind their outstanding performance.

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WHAT YOU WIN: A delightful, all-expense ten-day holiday in colorful Mexico for two persons. **RULES OF CONTEST:** Write a letter in 200 words or less, describing an effective, problem-solving use of Decalcomania by your company or industry. Contest is open to any commercial user of Decalcomania, regardless of type of usage or source of supply. You do not have to be a Meyercord customer. Coupon is your official entry blank. Fill out and attach to entry. Please use Company letterhead. Contest ends midnight, January 15, 1952. All entries become the property of The Meyercord Company. Decision of judges shall be final. In case of a tie, duplicate prizes will be awarded. Winners' names will be published. Employees of The Meyercord Company, its retail dealers or advertising agency are ineligible. **JUDGING:** Entries will be judged on the basis of practical and interesting problem-solving uses of Decalcomania. Enter the Contest TODAY! Anyone can Win! Attach this entry blank to your letter and mail to The Meyercord Co., 5323 W. Lake St., Chicago, Illinois, Box 3610

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of Purchasing, published monthly at Orange, Conn. for October 1, 1951.
State of New York } ss.
County of New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared A. M. Morse, Jr., who, having been duly sworn according to law, depose and says that he is the Business Manager of the magazine "Purchasing" and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537 Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Harvey Conover, B. P. Mast, 205 East 42nd Street, New York City 17; Editor, Stuart Heinritz, 205 East 42nd Street, New York City 17; Business Manager, A. M. Morse, Jr., 205 E. 42nd Street, New York City 17.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Pecay Inc., 205 East 42nd Street, New York City 17; Conover-Mast Publications Inc., 205 East 42nd Street, New York City 17.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there or none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees; hold stock and securities in a capacity other than that of a bona fide owner; and his affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is. . . . (This information is required from daily publications only.)

A. M. MORSE, JR.

(Signature of business manager)

Sworn to and subscribed before me this 17th day of September, 1951,

LEO F. HAGGERTY

Notary Public

(My commission expires March 30, 1953.)



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You should use Chicago "Safety Plus" Screws in Standard Listed Sizes.

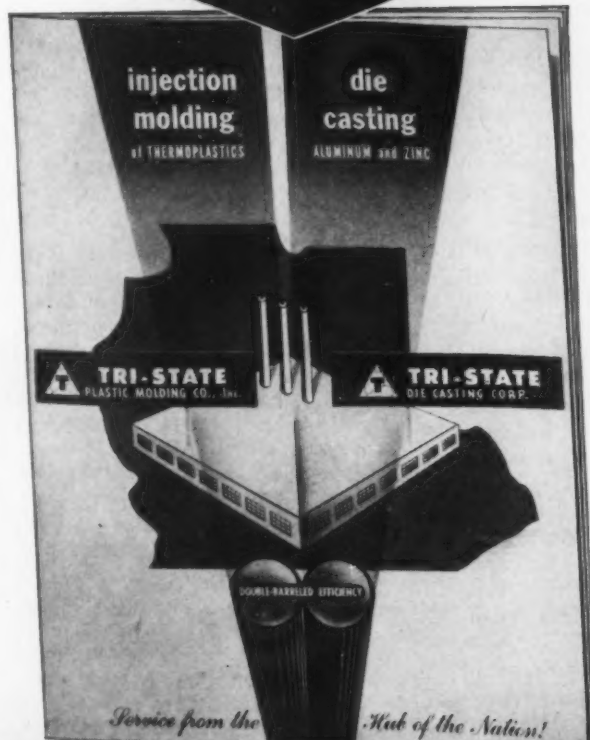
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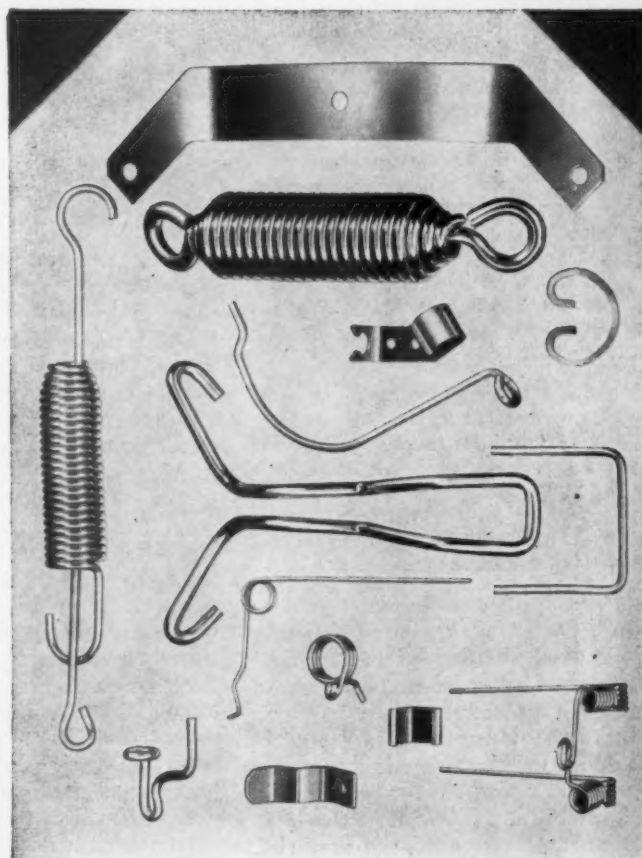
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LETTERS . . .

REPRINTS OF PURCHASING ARTICLES

Thank you for your permission to reprint the article, "Electric Typing Speeds Production" which appeared in the February, 1951 issue of *PURCHASING Magazine*.

C. F. Graff, Manager
International Business Machines Corp.
New York, N. Y.

We would like your permission to reprint for internal use "The Strategy of Leadership", originally published in the November 1950 issue of *PURCHASING*. Our reprint, if permission is granted, will be an offset print of the article as it appeared on page 172 of the Management Review for April 1951. Appropriate credit will of course be given. Distribution will be limited to supervisors within our organization.

J. M. Rich, Training Coordinator
Sharp & Dohme, Inc.
Philadelphia, Pa.

We issue a monthly bulletin to our salesmen, and feel that they would get a great kick out of Mr. Meara's article, "How to Approach a Salesman", in the May 1951 issue of *PURCHASING*. We would appreciate very much your permission to reprint the article in our bulletin, of course giving your publication due credit.

H. C. Ashworth
Asst. Admin. Govt. Regulations
Chase Brass & Copper Co.
Waterbury, Conn.

We are very much interested in using the cut on page 110 of your August issue in some of our sales literature. Will you please let us know if it will be possible for us to get permission to use this sketch.

R. E. Willis
Baltimore Salesbook Co.
Baltimore, Md.

● *PURCHASING* is happy to cooperate in cases of this sort to effect a wider dissemination of helpful and interesting editorial material. As a matter of procedure, there are two definite requirements as indicated in the specimen requests cited above—specific permission for reprinting, and credit line showing *PURCHASING* as the source of the material.

DELAYED REACTION

It was my intention upon first scanning the June issue of *PURCHASING* to write you a letter of congratulation on a job well done. However, I soon realized that the wealth of material contained in this "Purchase for Profit" issue was not to

be quickly glanced through and laid aside, but rather that a complete study must be made of the numerous case histories of cost saving purchases. The net result is that we personally have become quite cognizant of the fact that each item to be purchased must be more fully analyzed. Purchasing agents and their companies, regardless of size, will derive benefit from a study of this material. Thank you.

B. K. Sprung, Pur. Agt.
Manitoba Power Commission
Winnipeg, Canada
Vice President, N.A.P.A.

DO YOU HAVE A COMMODITY FILE?

We are contemplating setting up a commodity file in our Purchasing Department. Before going to any particular type of set up, we are wondering if you have any information in connection with commodity files that are now in operation in other purchasing departments.

If you have any literature along these lines or can refer us to any other purchasing departments, we will be pleased to follow the matter up.

Your assistance at this time will be appreciated.

W. V. Wilson
The Maytag Company
Newton, Iowa

● The two standard, all-inclusive classification outlines upon which many industrial commodity files are based are the "Commodity Classification for Storage and Issue" and the "Commodity Classification for Purposes of Procurement" developed by the Federal Standard Stock Catalog. Since most companies are concerned with only a portion of the complete list, and since the usefulness of such a file in the individual company may depend upon closer subdivision of the main headings, these classifications are usually modified considerably to fit the particular case. Several specific examples of commodity classifications used in purchasing departments in various types of industry have been published in connection with past articles describing these departmental operations. See also the chapter on "Stores Control" in the textbook "Purchasing" by S. F. Heinritz, published by Prentice-Hall Inc., 70 Fifth Avenue, New York, N. Y.

Perhaps some of our readers can help our inquirer with information on their own systems of maintaining a commodity file. We'll be glad to relay any suggestions.—Ed.

GOING! GOING! GONE!

Have you ever published any articles on industrial auctioneering (particularly the auctioning of heavy duty machinery, etc.)? If so, can you tell me if there are reprints of such articles available or in what past issues of *PURCHASING* they appeared?

Edith Johnson, Secretary
Harvard University, Graduate School
of Business Administration
Boston, Mass.

● We have not published any articles on this subject, nor do we find any other source of published material relating to it. The only specific reference we are able to offer is that we were advised during World War II, when maximum price schedules on used equipment were issued by OPA, that these maximum prices applied equally to purchases at auction or any other method of sale.

First-hand information on industrial auctioneering could be procured from specialists in this field, such as Industrial Plants Corp., Philip Sencer, or Schwartz Murray Co., all of New York City, or consult the classified telephone directory of any large city.—Ed.

FLORA AND FAUNA

I have found the magazine *PURCHASING* to be very interesting and useful, and also have enjoyed the booklet, "Cost Cutting Purchasing Systems." There are many good ideas to be found.

Ray E. Rydell, Asst. P. A.
McCormick Bros. Co.
Albany, Ind.

The *PURCHASING Magazine* has many fine articles—all of value to a purchasing agent. However, I prefer those articles that discuss systems or problems which may be compared with my department's operations and obtain helpful suggestions. My one suggestion is to expand your "Highlights" section to provide a greater synopsis of each article.

Neil McCormick, Pur. Dir.
Boeing Airplane Co.
Wichita, Kansas

I personally wish to state that *PURCHASING* is a valuable magazine to me. It has given me many ideas and knowledge that is absolutely unavailable elsewhere. Any help of this kind is greatly appreciated by a purchasing agent especially in such critical times.

J. Brown, Pur. Agt.
Johnson Furnace Co.
Kansas City, Mo.

WHATEVER YOUR **Heat Treating** PROBLEM IS.



**WE HAVE THE
EQUIPMENT
FOR IT!**

National Forge has *complete* facilities for heat treating forgings. Pictured here is a battery of vertical treating furnaces and quenching tanks with capacities up to 55 feet in length. In these furnaces forgings are treated uniformly over their entire length and the possibility of strains is minimized. Close metallurgical control by recording

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In the field of high alloy steels treated to the ultimate in physical properties, our reputation is nation-wide.

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NATIONAL FORGE AND ORDNANCE COMPANY

IRVINE, WARREN COUNTY, PENNSYLVANIA

NON TECHNICAL FUEL OIL MANUAL FOR BUYERS AND USERS

Those who buy, use or sell fuel oil for heat-treating, building heating, power generation or marine applications, will find much of value in Fuel Oil Manual by Paul F. Schmidt, chief chemist, Allied Oil Co., Inc., Cleveland, Ohio. The author has been associated 15 years with this company, which markets in excess of 500 million gallons of fuel oil annually, and he is in charge of testing all oils received and in blending oils for specific specifications. The book is the result of years of experience in trouble shooting.

Technical language is used as little as

possible, and theory and involved discussions of interest only to chemists or refiners are avoided. All terms are fully explained.

Covered in this book are complete data on the properties of fuel oil, the possibilities and limitations of each grade of oil, methods which can be used to assure uniform quality and efficient combustion, how to diagnose fuel oil troubles and how to remedy them, and particularly important, how to get maximum value from each fuel oil dollar. Under Troubles and Remedies are listed 22 of the common fuel oil troubles, their symptoms, and the remedy to follow in each case.

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Fuel Oil Manual, by P. F. Schmidt. Fabrikoid bound, 6 x 9 inches, 160 pages. Published by The Industrial Press, 148 Lafayette St., New York 13, N. Y. Price, \$3.50. Canadian or overseas postage 40¢.

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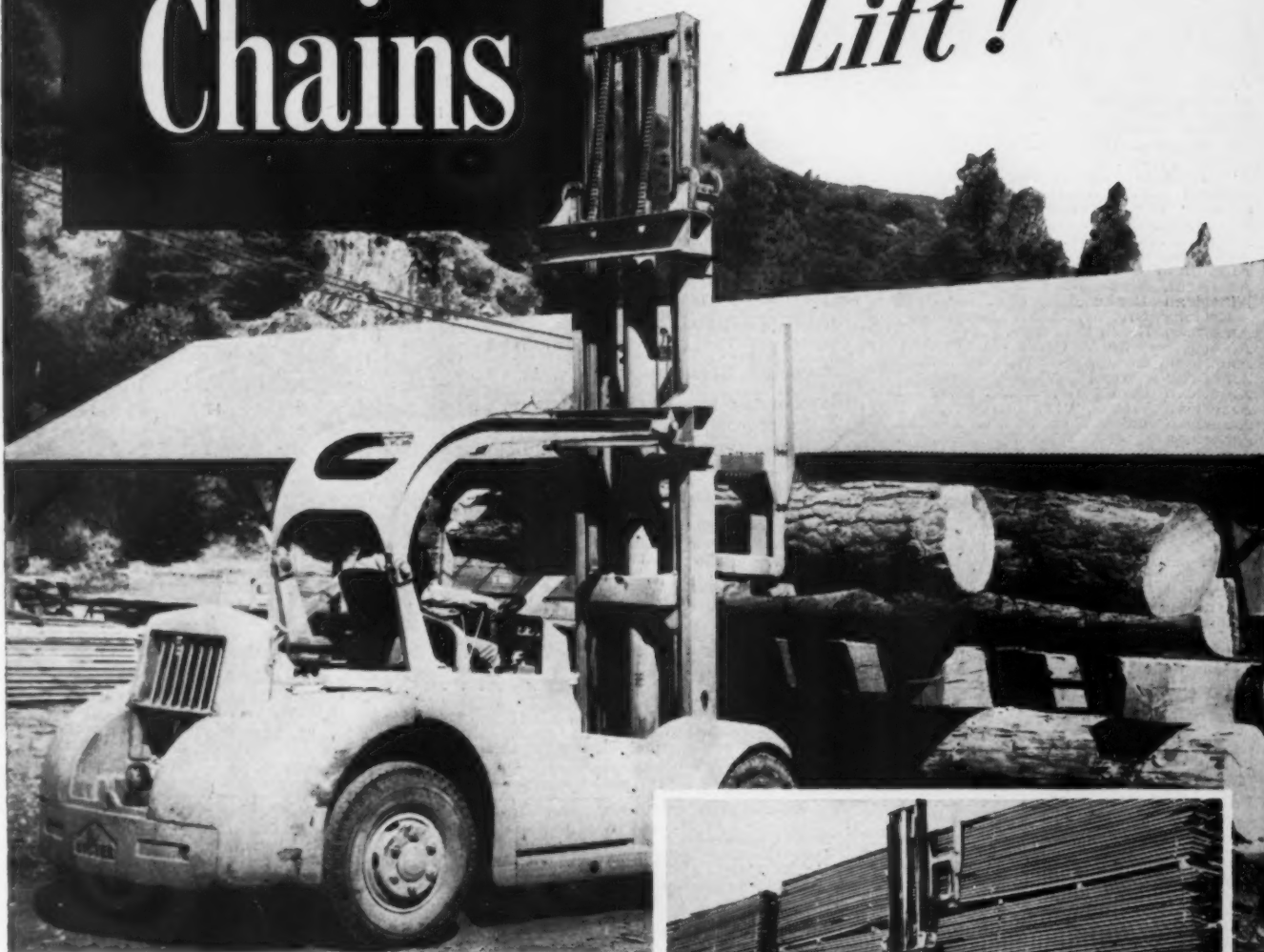
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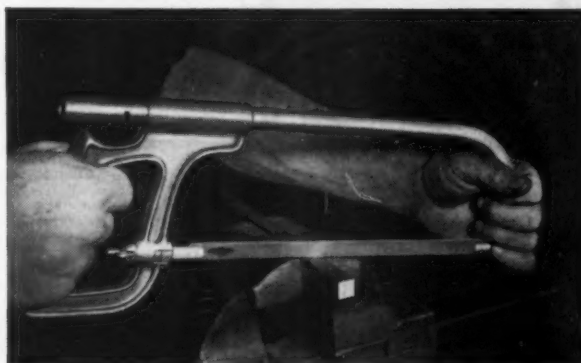
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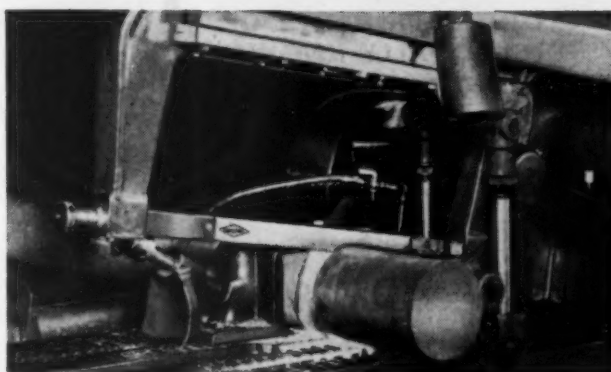
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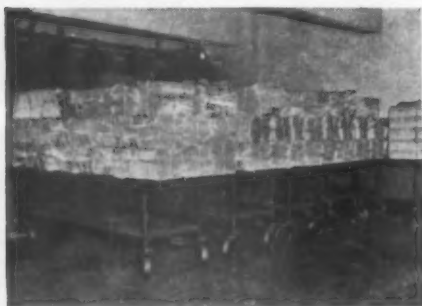
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Caster Quiz

A "quick facts" feature with helpful suggestions on the use of casters . . . to reduce materials-handling costs, the "Reducible 30%."*



Q Are standard casters made that are easy to mount on equipment with pipe legs?

A Yes. The Bassick Co. manufactures casters with threaded pipe sockets, with wheels ranging from 3 in. to 8 in. diam. There are sizes to fit pipes of $\frac{1}{4}$ in., 1 in., $1\frac{1}{4}$ in. and $1\frac{1}{2}$ in. diam. For lighter equipment, Bassick Casters are available in types to fit inside many sizes of pipe legs and steel tubing.



Q Are casters available that can readily be fastened to equipment with angle-iron legs?

A Yes. There are standard Bassick Casters with octagon stems to bolt or rivet to the inside of angles. Wheels range from $2\frac{1}{2}$ in. to 8 in. diam. The Bassick Co. also makes a variety of angle brackets, for easy application of stem casters with wheels from $1\frac{1}{2}$ in. to 5 in. diam.



Q Can swivel casters be held in fixed position?

A Yes. Many types, especially Bassick Heavy-Duty Casters, with 5 in., 6 in., 8 in. and 10 in. wheels, can be supplied with swivel locks. These easy-to-operate locks hold the swivel rigid until released, are a big aid in steering trailers or dollies that must be equipped with all swivel casters for easy maneuverability in confined areas.



Q Are roller or ball-bearing wheels essential in casters?

A No. They usually provide easier starting and rolling, but do not increase the caster's load capacity. There are many operating con-

ditions where plain bearing metal wheels or self-lubricating bearing composition wheels are perfectly satisfactory, more economical. *Most important today* (because of critical shortages of roller bearings), casters so equipped can be delivered far more promptly.



Q Where can Bassick Casters be bought?

A At selected local industrial distributors, stocked to serve you. Look for your nearest one in the classified phone directory, or write Bassick for this information.

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*According to cost analysts, materials-handling (about 30% of total cost) affords about the only real opportunities for cost reduction today.



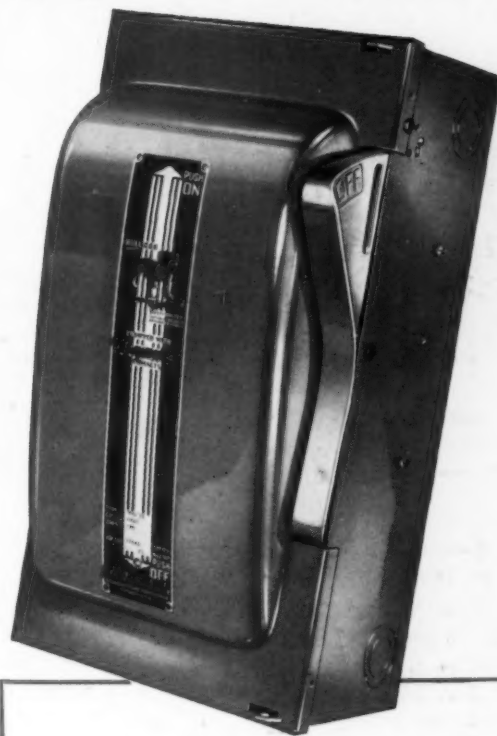
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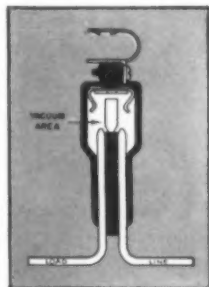
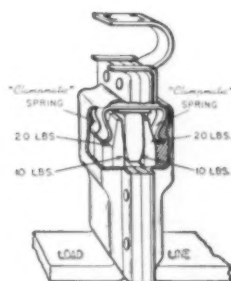
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Dangerous arcs are quickly snuffed out by lack of oxygen in Bulldog's exclusive Vacu-Break arcing chamber. This eliminates excessive arcing which, in ordinary switches, causes burning, pitting and rapid deterioration of contacts.

VOIDABLE COVER INTERLOCK!

Interlock: With interlock pin at Hole A, cover cannot be opened unless switch is OFF. Cover must be fully closed to throw switch ON.

To void interlock: Simply push interlock up and insert interlock pin in Hole B. Switch can then be thrown ON or OFF with cover open or closed.



All the famous Bulldog features!

- Vacu-Break principle of circuit rupturing
- Self-aligning Clampmatic Contacts
- Quick-make and quick-break
- Anti-creepage corrugations on switch bases and arc chambers
- Solderless cable terminals (wire grips)
- Horsepower-rated
- Silver-surfaced current-carrying parts
- Voidable cover interlock
- Spring-reinforced fuse grips
- Ample supply of concentric K.O.'s
- Generous wiring space in all switches

WRITE DEPT. 453-B FOR DESCRIPTIVE FOLDER
BULLDOG ELECTRIC PRODUCTS COMPANY
 DETROIT 32, MICHIGAN • FIELD OFFICES IN ALL PRINCIPAL CITIES
 IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO



BULLDOG

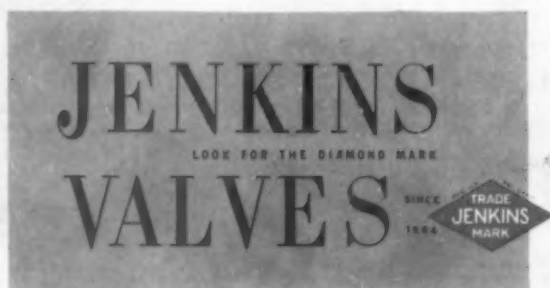
THE LEADER IN FLEXIBLE ELECTRICAL DISTRIBUTION



To speed installation in copper lines, you want a valve with an accurate fit to tubing—a valve that will not distort under the intense heat of soldering. And, because flexible tubing does not afford the rigid support of standard pipe, you want a valve that will withstand unusual strains in operation.

To give you Solder End Valves that meet *every* test in the toughest service Jenkins valve specialists designed them with an extra measure of rugged endurance, along with the dimensional accuracy and operating efficiency you expect in all valves of Jenkins quality.

A new Folder, Form 198, describes the complete line of Jenkins Solder End Valves, shows construction details, and gives instructions for correct installation. Get your copy—see why so many economy-wise valve buyers specify *Jenkins*. Jenkins Bros., 100 Park Ave., New York 17. Jenkins Bros., Ltd., Montreal.



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For
EASY INSTALLATION
POSITIVE CONTROL
LASTING ECONOMY
in copper line service

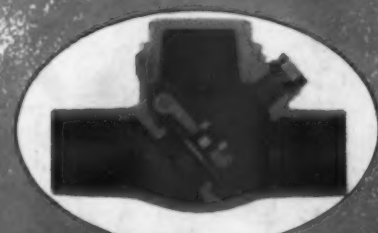
JENKINS *Solder-End* VALVES



GLOBES 300 lbs. O.W.G. 1½" to 3"
Fitted with Jenkins Renewable Composition Disc for any specified service.



GATES 225 lbs. and 300 lbs. O.W.G.
¾" to 3" With solid or split wedges, and stationary or traveling spindles.



CHECK 300 lbs. O.W.G. 1½" to 3"
Regrinding. May be easily reground without removal from line.

GET THIS New FOLDER ON JENKINS Solder End VALVES

Gives complete description, dimensions, and instructions for installation. Ask your Jenkins Distributor or write for Form 198: Jenkins Bros., New York 17.